CAE Healthcare

KYS Technology 錫昌科技

CAE Fidelis™ Lucina

Maternal Fetal Simulator

User Guide

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System Requirements

If you are not using a TouchPro computer or Wireless Remote provided by CAE Healthcare, please be sure to utilize a computer with wireless capability. When operating the TouchPro or Müse software, a computer with a Macintosh® or Microsoft Windows® operating system may be used.

To run the TouchPro or Müse software, the computer used must meet the following minimum requirements:

Macintosh® Operating System

Mac OS X10.6x (minimum)

Firefox® 24 ESR (minimum) Adobe Flash

Player® 16.x.x.x (minimum) Adobe

Reader 11.x (or higher)

Windows® Operating System

Windows 7 or Windows 8

Firefox® 24 ESR, Internet Explorer® 9 (minimum)

Adobe Flash Player® 16.x.x.x (minimum)

Adobe Reader 11.x (or higher)

Windows Hardware

Intel Core 2 Duo, 2.0 GHz (minimum)

4 GB DDR3 RAM (minimum)

32 GB Hard Drive space available

1366x768 screen resolution (minimum)

USB 2.0

Wireless 802.11b/g/n Ethernet card

100BASE-T Ethernet Adapter

Standard DVD+/-R Drive

Macintosh Hardware

Intel Core 2 Duo, 2.0 GHz (minimum)

2 GB DDR3 RAM (minimum)

8 GB Hard Drive space available

1024x768 screen resolution (minimum)

USB 2.0

Wireless 802.11b/g/n Ethernet card

100BASE-T Ethernet Adapter

Standard DVD+/-R Drive

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SPECIFICATIONS

All hardware and software needed for the operation of the simulator are supplied. If you wish to extend the Instructor Workstation to other computers, contact CAE Healthcare.

Size

Mannequin/Simulator: 69″ H x 22″ W x 15″ D (175cm x 56cm x 38cm)

Fetus/Simulator: 19″ H x 6″ W x 4.5.″ D (48cm x 15cm x 11.5cm)

Instructor Workstation: .95″ H x 12.78″ W x 8.94″ D (2.4cm x 32.5cm x 22.7cm)

Weight

Mannequin/Simulator: 111lbs (50 kg)

Fetus/Simulator: 5.5 lbs (2.5 kg)

Instructor Workstation: 4.5lbs (2.1kg)

Environmental Requirements

Ambient Temperature Range

Mannequin/Simulator

Operation: 40°F to 104°F (4°C to 40°C)

Storage: 40°F to 122°F (4°C to 50°C)

Relative Humidity: 0% to 90% noncondensing

Instructor Workstation

Operation: 50°F to 95°F (10°C to 35°C)

Storage: -13°F to 113°F (-24°C to 45°C)

Relative Humidity: 0% to 90% noncondensing

Maximum Altitude

Instructor Workstation

Maximum operating altitude: 10,000 ft

Maximum storage altitude: 15,000 ft

Maximum shipping altitude: 35,000 ft

Power

Mannequin/Simulator

AC Input: AC 100 – 240VAC, 50/60Hz

Consumption: Maximum 150W (Charging), 100W (charged), Typical 40W

Internal Batteries: 14.4V 90-watt-hour lithium-ion, rechargeable

Run Time: 4 hours (Typical)

Fetus/Simulator

Run Time: 7 hours (Typical)

Instructor Workstation

AC Input: AC 100 – 240VAC, 50/60Hz

Consumption: Maximum 85W (Charging)

Internal Battery: 10.8V 60-watt-hour lithium-polymer, rechargeable

Run Time: 2 to 4 hours (Typical)

TouchPro Computer

Please see the product's user guide for power specifications.

Communications

Simulator Network

Wired: 10/100 Ethernet or

Wireless: IEEE 802.11g

Wireless Voice

537 MHz to 819MHz (Country Specific)

Electrotherapy

Defibrillation: 20 to 360 joules (Monophasic, Biphasic)

Pacing: 20ma to 180ma

Air Supply

To properly regulate psi, the optional wall air kit must be used in conjunction with the facility supply source and facility wall adapter.

CAUTIONS AND WARNINGS

Please read and understand these cautions and warnings before you begin using the CAE Fidelis™ Maternal Fetal Simulator system.

USE OF THIS EQUIPMENT IN AN UNSPECIFIED MANNER, MAY IMPAIR DESIGNED PROTECTION.

Your safety is in your hands. Be sure to follow the instructions on the proper setup, breakdown and use of the Fidelis system.

SHOCK HAZARD

Electrical Safety

- This product must be connected to an electrical outlet that is properly grounded. Precautions should be taken so that grounding or polarization is not defeated.
- Do not place defibrillator paddles on or adjacent to the ECG patient electrodes. Contact between defibrillator paddles and the electrodes may cause injury to the user and damage to the equipment.
- Always use the supplied power cords. Do not substitute.
- Operate the system from a power source with the following rating:
    - 115VAC, 50/60 hertz (cycles per second) (e.g., North America, Japan)
    - 230VAC, 50/60 hertz (cycles per second) (e.g., Europe)
- Do not allow excess fluids to flow on or into electronic parts.
- Do not attempt to disassemble the simulator or service any of the electrical components other than changing the batteries.
- Always use the supplied power adapter to charge or run simulator from AC.

Latex Warning

CAE Healthcare simulators incorporate latex into their design. When performing certain maintenance procedures, the latex can become exposed. Users with latex sensitivity should take necessary precautions when handling the simulator while performing those procedures.

General Use Warnings

Please observe the following warnings when using the Fidelis Lucina simulator.

Electrical System

- Operate the system from a power source with the following rating: 115VAC, 50/60 hertz (cycles per second) (e.g. North America, Japan), and 230VAC, 50/60 hertz (cycles per second) (e.g. Europe)
- Do not operate the MFS system in rain. Apply water to the mannequin only in accordance with the supported clinical procedures identified in this User Guide.
- Do not allow excess fluids to flow on or into electronic parts.

Bleeding System

- DO NOT modify the tank or any assembly component.
- ALWAYS protect eyes, skin and clothing against accidental exposure.
- ALWAYS read and follow instructions for creating trauma fluids (e.g. blood). NEVER fill the tank with more than 2 liters (0.5 gallons) of fluid.
- After use, ALWAYS drain the tank. DO NOT store liquids in the tank.

Transport

- Prior to using the stretcher packed with the shipping container, the mannequin must be wrapped in a sheet. Failure to wrap the mannequin in a sheet may result in permanent damage to the mannequin skin.
- CAE is not responsible for damage to the mannequin skin if the mannequin is not wrapped in a sheet while using the stretcher.

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INTRODUCTION

Welcome to the CAE Fidelis™ Lucina Maternal Fetal Simulator user guide. This guide provides complete instructions on how to use and maintain your simulator. The Fidelis Lucina simulator has been designed to provide instructors and learners with advanced tools for obstetrical training.

The CAE Fidelis Lucina Maternal Fetal Simulator - Maternal Mannequin

The autonomous simulator reacts to medical interventions with appropriate physiological responses and wirelessly communicates with the Instructor Workstation, creating an authentic experience for the learner and keeping the instructor informed as the scenario progresses. The Instructor Workstation provides the instructor with scenario development tools and programmable patient physiology to create an immersive, realistic training environment.

The Fidelis Lucina simulator provides all the components necessary for prepartum care, normal and complicated vaginal deliveries and postpartum care. The simulator supports cephalic and breech delivery, placenta delivery, shoulder dystocia, nuchal cord, neonate crying, postpartum vaginal bleeding, and boggy and inverted uterus. In addition, the following medical interventions can be performed:

- ECG and electrical therapy
- Epidural administration
- Forceps delivery
- Intubation
- Leopold's maneuvers
- McRoberts maneuver
- Medication and fluid administration
- Mechanical ventilation support
- Neonate suctioning
- Rotational maneuvers
- Suppository administration
- Uterine massage and bimanual compression
- Vacuum delivery
- Zavanelli maneuver

Contained in this User Guide

This User Guide has been designed for quick access to information on how to use and maintain the CAE Fidelis™ Maternal Fetal Simulator. Please be sure to read and follow the **Cautions and Warnings** on the pages preceding the **Table of Contents**. This is for the safety of users as well as for the protection of the simulator.

The **Equipment Overview** outlines the items that come standard with the purchase of a Fidelis. Before using the system, follow the step-by-step instructions included in the **Setup** section.

The **Configuring the Mannequin** section shows users how to configure the internal components (i.e., cervix, uterus, fetus) of the Fidelis for the different birthing options.

The **Using Müse** section describes the different features and functions in the Müse software.

The **Using TouchPro Patient Monitor** and **Using the TouchPro CTG** sections describe how to setup and utilize the TouchPro Patient Monitor and TouchPro CTG software.

The **Using the Maternal Fetal Simulator** section provides instructions on the use of the various parameters and hardware features integrated into the simulated experiences. This section also includes information on how the simulator and software components work and the functionality that each supports.

The **Care and Maintenance** section contains warranty details and cleanup and care instructions that must be followed to ensure optimal functioning of the Fidelis.

The user guide also includes information on:

- Condition Guidelines for Programming Patients in Müse
- Müse Parameter Descriptions
- Parameter Display Definitions
- Recommended Clinical Supply Sizes
- Ischemic Index Conditions
- Wireless Voice Link Instructions
- Maternal Fetal Simulator Medication Information
- Müse Mannequin Setup Screens

Equipment Overview

The CAE Fidelis™ Lucina Maternal Fetal Simulator is CAE Healthcare's premiere high-fidelity birthing simulator. Fidelis Lucina comes with standard equipment as well as additional equipment. Optional equipment refers to items which are available for purchase to enhance the simulation experience and additional equipment refers to consumable items which are available for purchase as they may need to be replaced.

Standard Equipment

The standard equipment for Fidelis Lucina includes all the necessary equipment for basic use of the simulator. The items listed in the table below are shipped with the simulator.

Standard Equipment
Full-Body Wireless Mannequin
Laptop Instructor Workstation
TouchPro Workstation
Power Adapters/Cords (2)
Gown
Prepartum/Early Labor Kit
Vaginal Delivery Kit
Postpartum Kit
Accessories

Full-Body Wireless Mannequin

All maternal patient assessments and clinical interventions are played out on the maternal mannequin, which represents a human patient. At 5 feet, 9 inches (175 cm) in height and weighing 111 pounds (50.39 kg), Fidelis Lucina is fully operational in the supine, lateral, prone and seated positions. The simulator offers features such as arm pronation and supination, breath and heart sounds, palpable pulses, patient voice, labor and delivery features, and genitourinary features. The mannequin comes with two batteries in place, on the left side.

Laptop Instructor Workstation

The Laptop Instructor Workstation is a computer that utilizes Müse Software to operate as the main simulation control center.

Instructors control the simulation session from the Workstation by using SCEs that meet their learning objectives.

IMPORTANT: All CAE Healthcare computer components are preconfigured for use with the Fidelis Lucina system. There are no software installation or configuration steps required. Only approved CAE Healthcare applications should be installed or run on the Fidelis Lucina system.

TouchPro Workstation

The TouchPro workstation is a touchscreen display monitor that utilizes the TouchPro Patient Monitor or the TouchPro CTG software. The TouchPro CTG software represents the cardiotocography monitor for reading the fetal heart rate (FHR) and the uterine contractions, as well as displays the maternal heart rate, NIBP, SpO_2 and body temperature.

Power Adapters and Cords (2)

The Fidelis Lucina comes with two sets of power adapters and cords: one for the maternal simulator and one for the fetal simulator.

Gown

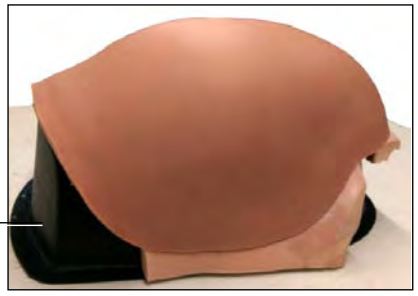
A gown is provided for the maternal mannequin to enhance the reality of the simulation.

Prepartum/Early Labor Kit

The Prepartum/Early Labor Kit contains the following items:

- Prepartum birth canal
- Static Cervix backplate
- Static Cervix retention plate
- Essential Set of Static Cervices
    - Closed without effacement and permeable by 1 finger, firm, posterior
    - Closed 50% effaced, permeable by one finger, medium, posterior
    - 4 cm dilated and 90% effaced, soft, intermediate
- Leopold fetus
- Leopold tub
- Prepartum abdomen with abdomen storage rack.

  NOTE: To help prevent damage, apply a light dusting of baby powder to the storage rack and always store the abdomen on the rack when not in use.



The Abdomen and Storage Rack

Vaginal Delivery Kit

The Vaginal Delivery Kit contains the following items:

- Uterine funnel with delivery cervix
- Delivery fetus
- Placenta (Intact)
- Placenta (Fragmented)
- Placenta fragment
- Umbilical cord
- Delivery abdomen
- Lubricant (cottonseed oil)
- Lubricant spray bottle

Postpartum Kit

The Postpartum Kit contains the following items:

- Postpartum Birth Canal with Boggy/Contracted Uterus
- Blood Tank
- Trauma Fill Tank

Accessories

The accessories for the Fidelis Lucina include:

- Four ECG posts
- Pacing/defibrillation disks
- NIBP Adapter Kit
- IV priming syringe
- Priming tube
- Roll of hook and loop fastener (for forceps)
- Genitourinary (GU) Filling Tool
- Blood tank adapter
- Condensation drain
- IV Tubing Single Replacement Kit
- Wireless Voice Link Kit

Optional Equipment

The following equipment is available to customize the specific needs of a wide variety of education environments.

Supplemental Static Cervices Kit

The supplemental static cervices kit contains a set of cervices in addition to the essential static cervices kit. The supplemental static cervices kit includes:

- Closed without effacement and not permeable by one finger, firm, posterior
- Closed 70% effaced and permeable by one finger, medium, posterior
- 2 cm dilated and 80% effaced, soft, intermediate
- 3 cm dilated and 80% effaced, soft, intermediate
- 5 cm dilated and 90% effaced, soft, anterior

Operation Supplemental Accessories

The operation supplemental accessories are available to enhance the realism of the simulation experience. The following supplemental accessories are available for individual purchase:

- Revertable Uterus
- All-Four Position kit:
    - Protective abdomen shell
    - All-four position support straps
- Hands-free electrical therapy kit - Zoll
- Hands-free electrical therapy kit - Physio Quick Combo
- Hands-free electrical therapy kit - Philips AED
- Spanner
- Wall air kit (Required when using the facility supply source and facility wall adapter)

Additional Equipment

Some items are available for purchase as additional equipment:

- Arm skin
- Delivery birth canal (including perineum and vulva)
- Delivery fetus
- Hand skin (left or right)
- Leopold fetus
- Lubricant spray (cottonseed oil)
- Non-Gravid Abdomen
- Roll of hook and loop fastener (for forceps)
- Uterine funnel with delivery cervix
- Umbilical cord
- Vein tubing replacement kit

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SETUP

This section provides instructions and guidelines for assembling the simulator and configuring the Instructor Workstation. Follow these steps to prepare for your simulation experience.

Setting Up the Maternal Fetal Simulator	
1	Place Mannequin in the Work Area
2	Power on the Mannequin
3	Power on the Instructor Workstation
4	Connect to the Wireless Network
5	Connect the TouchPro CTG Monitor to the Wireless Network
6	Connect the TouchPro Patient Monitor to the Wireless Network (optional)
7	Start Müse
8	Configure the Mannequin
9	Fill the Bleeding Fill Tank (optional)

NOTE: Replacement procedures are located in the *Care and Maintenance* section of this user guide.

Before Beginning Setup

Proper operation of the simulator requires correct configuration. Before setting up the system, keep in mind these basic guidelines:

- Read and understand the Cautions and Warnings located in the beginning of this User Guide.
- Follow the sequence of the steps carefully.
- Complete all steps in order.
- Do not power on any components until instructed in the text.
- Keep all original shipping materials, including boxes. Warranty and repair items must be returned and shipped in their original packaging.
- When unpacking the mannequin for the first time, careful use of box cutters protects both the packaging and the product.

Step 1: Place Mannequin in the Work Area

Select a work area with enough room for all equipment, providing ample space for easy access to the simulator. At least a 10' x 12' (3 meter x 4 meter) work area is recommended for movement of learners and positioning of components around the simulator.

The CAE Fidelis Lucina Maternal Fetal Simulator - Maternal Mannequin

The maternal mannequin and the Instructor Workstation may all be operated from their batteries, allowing for wireless use.

In a lab environment, make sure that a multi-plug AC power outlet exists within the workspace to recharge the simulator and its powered components.

Before placing the simulator on a surface, be certain that surface can easily support 200 pounds.

NEVER lift the simulator by the LIMBS. Leverage the torso of the simulator and support the head while lifting.

Ensure the abdomen is installed on the torso whenever the mannequin is positioned upright.

Do not use a surgical cap on the mannequin, as overheating may occur.

Prior to using the stretcher packed with the shipping container, the mannequin must be wrapped in a sheet. Failure to wrap the mannequin in a sheet may result in permanent damage to the mannequin skin. CAE is not responsible for damage to the mannequin skin if the mannequin is not wrapped in a sheet while using the stretcher.

Step 2: Power on the Maternal Mannequin

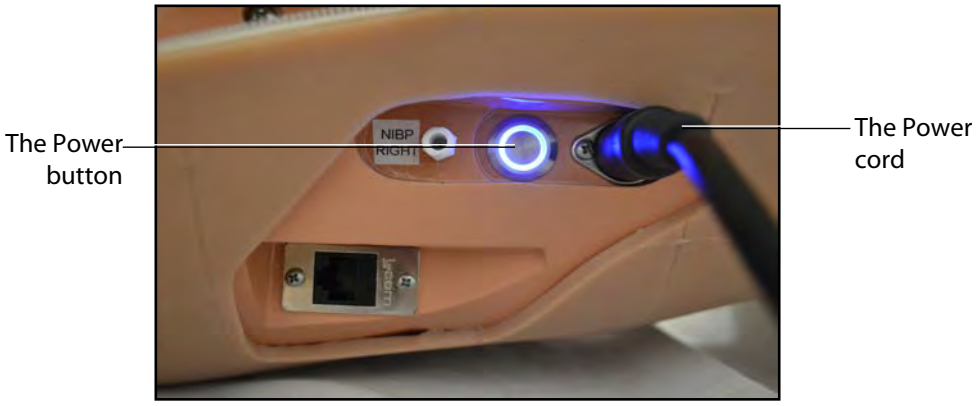
To power on the maternal mannequin:

a. Prior to powering on the simulator, ensure the Fidelis Lucina mannequin has fully charged batteries inserted into the left side of the torso or the power cord is attached on the right side of the torso.

b. Locate the power button on the right side of the Fidelis Lucina mannequin's torso.

c. Press and release the power button.

   The button illuminates when the mannequin is powered on.



The Mannequin Power Button and Power Cord

IMPORTANT: Wait three (3) minutes while the simulator establishes a wireless network before attempting to connect to the instructor workstation. Failure to wait will prevent proper connection if the user attempts to make a direct Ethernet connection to the simulator network. The mannequin should say, "Hello" when it is ready to be used with the Müse software.

Each time the maternal mannequin is powered on, the rotation ring must be returned to the Home position. To return the rotation ring to the Home position, press and hold the upward arrow button until the rotation ring returns to the "Home" position (e.g., the highest position of the Birthing Mechanism), rotates and locks in place.

The Gripper Button Pad

For information on recharging batteries, see the *Care and Maintenance* section of this user guide.

Step 3: Power on the Fetus

To power on the fetus:

a. Prior to powering on the simulator, ensure the fetus has fully charged batteries.

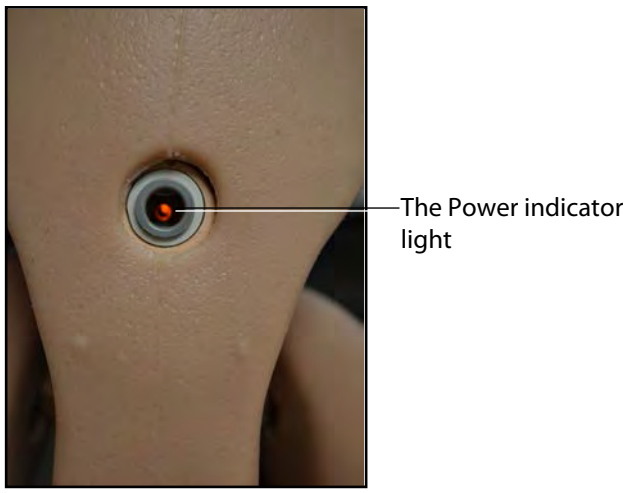
   For more information on charging the fetus, see the *Care and Maintenance* section of this user guide.

b. Locate and press the power button on the back of the fetus.

The Back of the Fetus

- A green light will begin blinking in the umbilical indicating the fetus is powering up.
- When the umbilical light begins alternating between green and orange, the fetus is powered on and communicating with the maternal mannequin.
- When the umbilical light is a solid green, the fetus is running with good battery.

NOTE: When the umbilical light is a solid orange, the battery life for fetus is less than one hour.



The Front of the Fetus

IMPORTANT: Each fetus is specifically configured to connect to its designated maternal mannequin. The last three digits of the maternal mannequin's serial number are located on the back of the matching fetus under the skin below the USB power port.

If there are multiple units, keep each fetus with its designated maternal mannequin at all times.

For more information on charging the fetus' batteries, see the *Care and Maintenance* section of this user guide.

Step 4: Power on the Instructor Workstation

To power on the instructor workstation

a. Place the Laptop or Tablet Instructor Workstation near mannequin in a convenient location.

b. Connect the AC adapter to the Instructor Workstation and a surge-protected power outlet (optional).

   NOTE: If the Instructor Workstation is running on battery power, ensure the battery is fully charged.

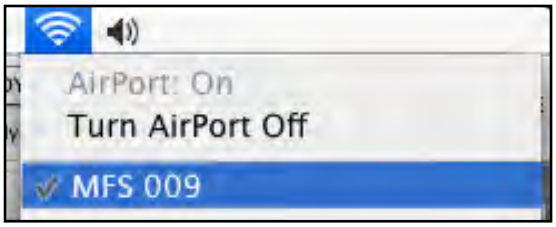
c. Press the power button on the Instructor Workstation.

Step 5a: Connect to the Wireless Network - Laptop Instructor Workstation (Macintosh) Option

Once the mannequin and the Instructor Workstation are both powered on, they automatically establish a wireless connection and, when the default web browser is opened, the Müse software launches.

If the auto-connect does not occur, perform the following steps:

a. Click once on the **AirPort** icon located at the top-right-hand corner of the screen.



The Airport Icon

b. Select the simulator wireless network (mfsxxx).

c. Enter the password *caeadmin* (case-sensitive).

Airport Login Window

d. Click **OK**.

The Müse software can now be launched.

For more information on starting the application, see the *Using Müse* section of this user guide.

Step 5b: Connect to the Wireless Network - Laptop or Tablet Instructor Workstation (Windows) Option

Once the mannequin and the Instructor Workstation are both powered on, they automatically establish a wireless connection and, when the Internet Explorer browser is opened, the Müse software launches. If the auto-connect does not occur, perform the following steps:

a. Click (or tap) on the **Wireless Network** icon in the task bar.

b. Select the simulator wireless network.

   The network is called mfsxxx and the password is *caeadmin* (the password is case-sensitive).

c. Click (or tap) the **Connect** button.

   The wireless connection is established. The Müse software can now be launched using Internet Explorer.

For more information on starting the application, see the *Using Müse* section of this user guide.

Step 6: Connect a TouchPro™ Workstation to the Wireless Network (Optional)

The CAE Healthcare TouchPro workstation comes pre-configured for use with the simulator. If you wish to supply your own computer to run the TouchPro software, the computer must meet the system requirements and must join the simulator network prior to use.

The simulator and Instructor Workstation form a local area network with static IP addresses. To incorporate an additional computer to run TouchPro, the computer's network properties must be configured to join the simulator network. Contact the system administrator for your institution or CAE Healthcare Customer Service to configure the network properties, if necessary.

NOTE: The Instructor Workstation MUST be connected to the simulator network prior to performing the steps below. See the previous setup step for more information.

To connect the TouchPro software to a different computer than the workstation provided by CAE Healthcare:

a. Power on the computer to be used for the TouchPro software.

b. On the Instructor Workstation MacIntosh® laptop, from the **Apple** menu, click **System Preferences**.

   The System Preferences screen appears.

c. From the System Preferences screen, click **Network**.

   The Network screen appears.

d. From the Network screen, click **Advanced**.

   The Advanced screen appears.

e. From the Advanced screen, click **TCP/IP**.

   Note the IP Address listed next to the **IPv4 Address** header.

f. Write down the IP Address and click **Cancel** to close the Advanced screen.

g. Close the Network screen.

h. On the computer to be used for the TouchPro software, open a web browser window.

i. In the address field, enter the noted IP address.

The Müse Start screen appears.

The Müse Start Screen

j. Choose the TouchPro CTG or the TouchPro Patient Monitor to launch the software.

NOTE: If you experience poor waveform quality or connection dropouts, consider relocating the simulator to a position with less interference in the 2.4Ghz wireless frequency.

Configuring The Mannequin

The maternal mannequin must be configured properly in order to run the various SCEs. Prior to beginning a configuration, users must select a SCE in the Müse software.

NOTE: To avoid any unexpected behavior, users must click the **Stop** button in the Müse software to end an SCE is that is currently running prior to selecting a new SCE and configuring the mannequin.

The table below outlines which processes are necessary to properly configuring the mannequin for each type of SCE.

Process	Prepartum & Latent	Active (Non-Delivery)	Vaginal - Vertex*	Vaginal - Breech*	Postpartum - Boggy/Contracted Uterus
Installing the Rotation Ring	No	No	Yes	Yes	No
Removing the Rotation Ring	Yes	Yes	No	No	Yes
Installing the Support Tub	Yes	Yes	No	No	No
Filling the Blood Tank**	No	No	No	No	Yes
Installing the Blood Tank	No	No	No	No	Yes
Installing the Boggy/Contracted Uterus	No	No	No	No	Yes
Installing the Prepartum Birth Canal	Yes	No	No	No	No
Installing the Static Cervix	Yes	No	No	No	No
Installing the Backplate	Yes	No	No	No	Yes
Installing the Retention Plate	Yes	No	No	No	No
Installing the Uterine Funnel with Dynamic Cervix	No	Yes	Yes	Yes	No
Installing the Placenta	No	Yes	Yes	Yes	No
Loading the Fetus	Yes	Yes	Yes	Yes	No
Installing the Prepartum Abdomen	Yes	Yes	No	No	Yes
Installing the Delivery Abdomen	No	No	Yes	Yes	No

*When in the Vaginal Delivery Operating Mode, if the user selects *Proceed To Postpartum* after the baby is marked as delivered, do not stop the SCE. However, it is necessary to reconfigure the mannequin for postpartum configuration prior to proceeding.

**This process may be completed before installing the blood tank or after installing the blood tank, depending on which filling method is chosen (internal or external).

For more information on selecting an SCE, see the *Using Müse* section of this user guide.

For more information on processes such as priming the genitourinary system, epidural site or IV system, see *Using Lucina* section of this user guide.

PREPARTUM

Removing the Rotation Ring

To remove the rotation ring from inside the mannequin's torso:

1. Unfasten the yellow air compression tube at the baffle by pressing the metal release clip.

The Mannequin's Torso - Rotation Ring Compressor Connection

2. Unfasten the clips on each side of the ring.
    a. Push the top of the clip out to unsnap.
    b. Push slightly down to unclip the bottom of the clip.

The Mannequin's Torso - Rotation Ring Side Clip

3. Lift the ring out of the torso and place the rotation ring in a secure location for later use.

The Mannequin's Torso - Rotation Ring Removed

The mannequin's torso is empty and ready for the next piece of equipment to be installed.

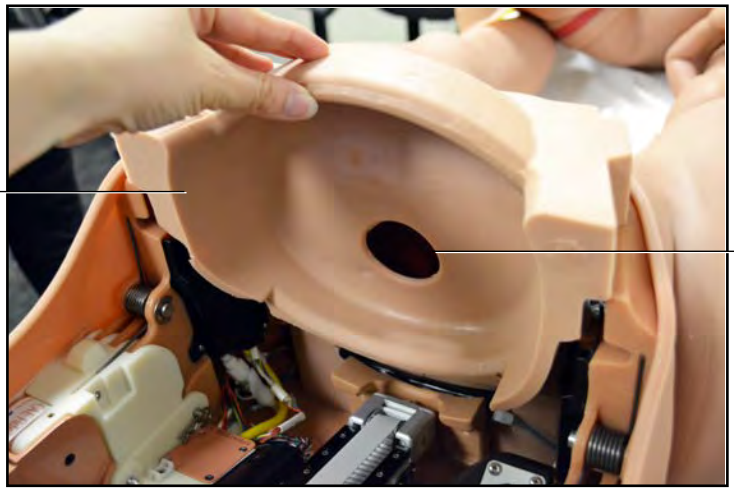
CAUTION: Avoid contact with any other part of the mannequin while removing the rotation ring. Do not place pressure or any object on the rotation ring support arms while the rotation ring is removed.

Installing the Static Cervix

Prepartum and Latent Cervix Installation

To install a static cervix for a prepartum and latent SCE:

1. Remove the uterine funnel with delivery cervix by lifting the part up and out of the mannequin's pelvis.



The Uterine Funnel with Delivery Cervix Removal

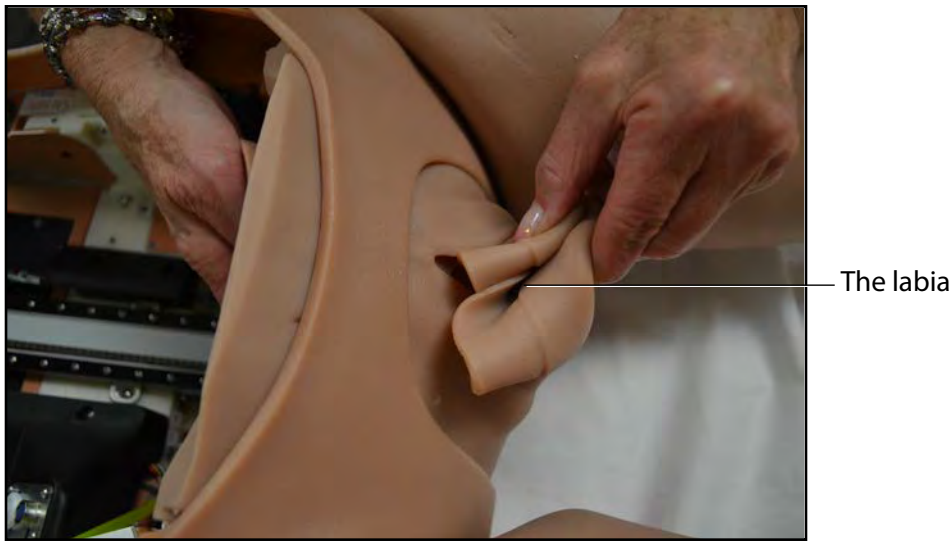
2. Install the prepartum birth canal.

   NOTE: The prepartum birth canal is installed within the standard birth canal.

   To install the prepartum birth canal:

   a. Using the cottonseed oil provided, lightly lubricate the inside of the standard birth canal, the labia, the perineum, and the vaginal labia of the prepartum birth canal.

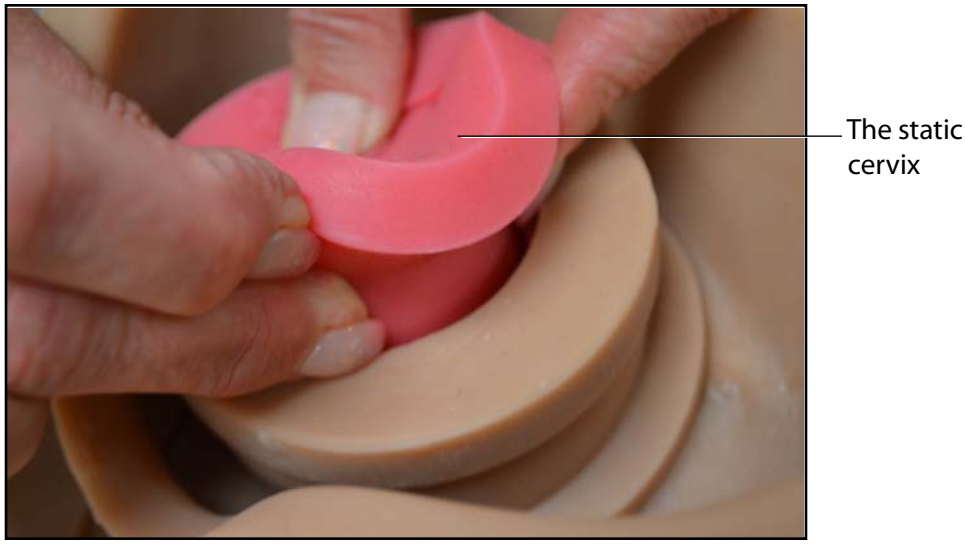
b. Place the prepartum birth canal inside the mannequin's torso and pull the perineum section out through the standard birth canal.



The Prepartum Birth Canal

c. Tuck the skin shorts over the extended flaps.

To install the static cervix, lubricate the anterior part of the selected cervix and insert at the posterior end of the prepartum birth canal with the arrow pointing upward.



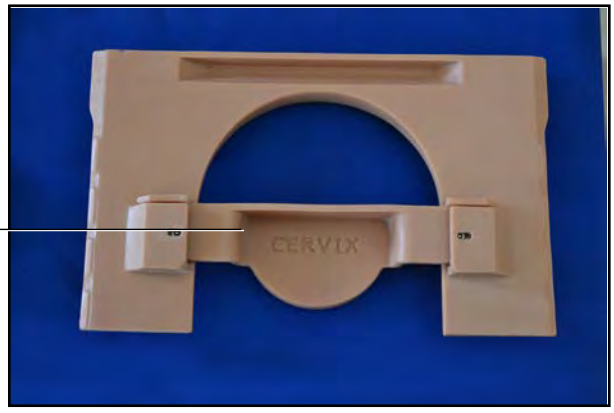
The Prepartum Birth Canal and Static Cervix

Installing the Backplate

Prepartum and Latent Backplate Installation

To install the backplate for a prepartum and latent SCE configuration:

1. Ensure the cervix retention plate is placed into the grooves located in the center of the backplate.

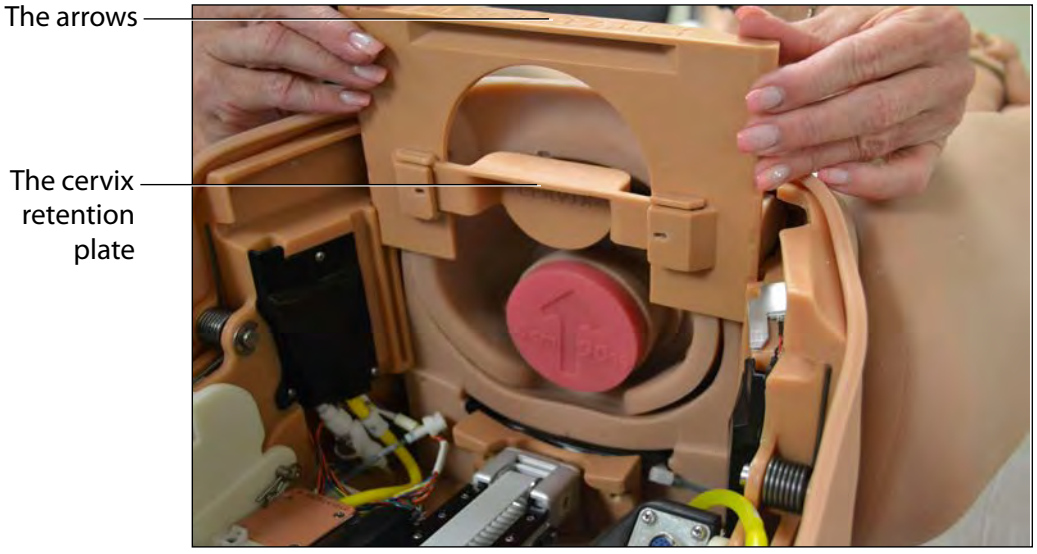


The Backplate

2. Install the backplate with the cervix retention plate.

   The retention plate should be flush against the static cervix.

   NOTE: Ensure the arrows on the top of the plate point towards the mannequin's feet.



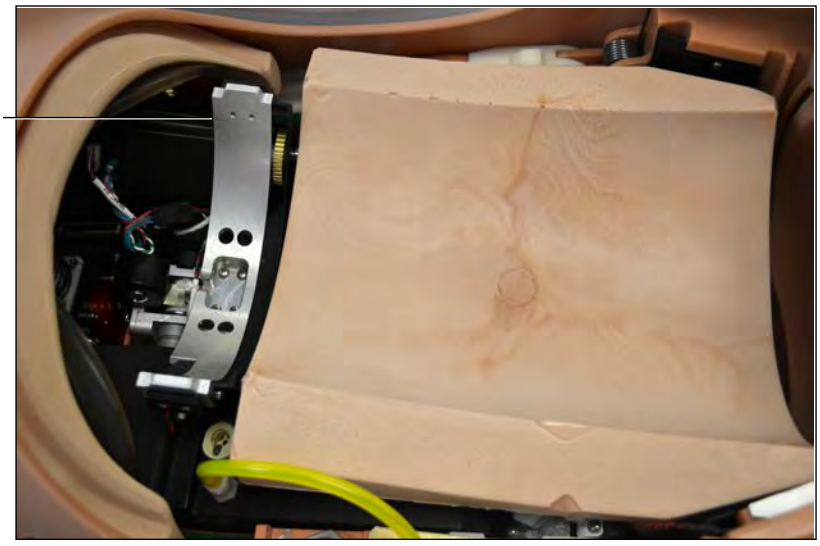
The Backplate Installed

The backplate is now installed for a prepartum and latent SCE.

Installing the Support Tub

The support tub is used to hold the fetus during prepartum/latent phase.

1. Install the Leopold support tub in the mannequin's torso.



The Mannequin's Torso - The Support Tub

The mannequin is ready for installing the Leopold fetus.

CAUTION: Do not place pressure or any object on the rotation ring support arms while the rotation ring is removed.

Loading the Fetus - Prepartum

Prepartum and Latent

To load the Leopold fetus:

2. Ensure the Leopold support tub is installed in the mannequin's torso.
3. Place empty placenta pouch on top of the support tub.
4. Place the Leopold fetus on top of the placenta pouch and tub in the desired position.
5. Cover with the prepartum abdomen.

Active Phase

To load the delivery fetus:

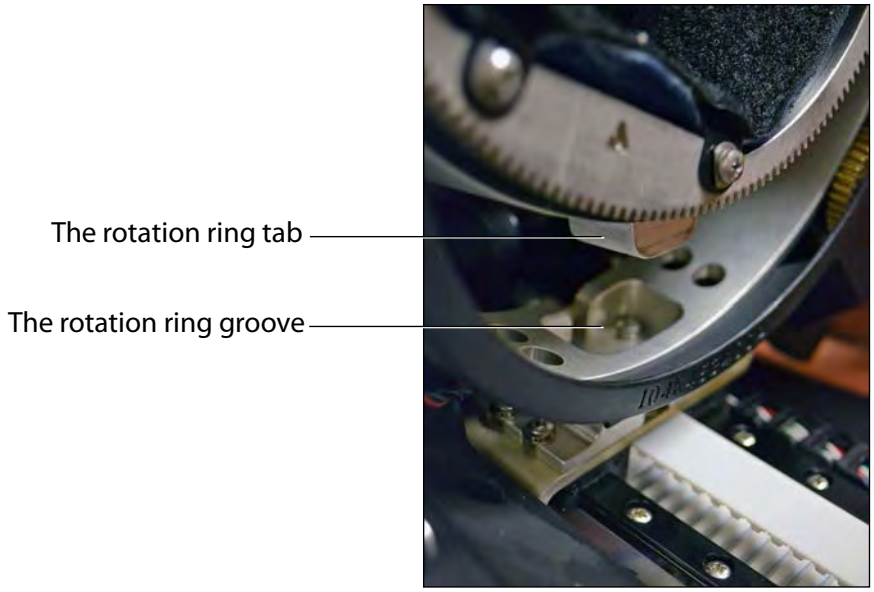
1. Install the placenta pouch.
2. Attach umbilical cord to fetus and placenta. Place placenta inside pouch.
3. Place the delivery fetus on top of the placenta pouch.
4. Cover with the prepartum abdomen.

Delivery
Installing the Rotation Ring

The rotation ring must be installed prior to running a delivery SCE.

To install the rotation ring inside the mannequin's torso:

1. Align the rotation ring tab (located on the side opposite of the CAE Fidelis logo) with the rotation ring groove inside the mannequin's torso.



The Rotation Ring

2. Secure the clips on each side of the rotation ring.
    a. Ensure the side connections are fully inserted and aligned.
    b. Latch the bottom of the clip to the rotation ring.
    c. Push the top of the clip in to securely fasten.

The Mannequin's Torso - Rotation Ring Clip

3. Connect the yellow compression tubing on the rotation ring to the compressor connection on the baffle.

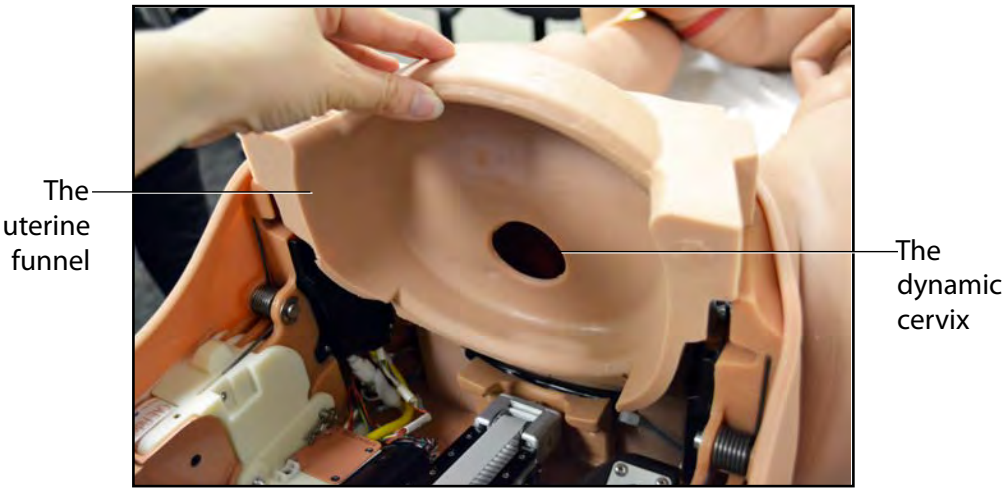
The Mannequin's Torso - Rotation Ring Compressor Connection

4. Use the upward arrow on the gripper button pad located on either side of the mannequin's torso to move the rotation ring to the highest (Home) position in the mannequin's torso. The rotation ring is now ready for installing a fetus.

Installing the Uterine Funnel with Dynamic Cervix

The uterine funnel with dynamic cervix is used for **active** and **delivery** SCE configurations.

To install the uterine funnel with dynamic cervix, slide the uterine funnel with delivery cervix into the grooves located on each side of the mannequin's pelvis.



The Uterine Funnel with Dynamic Cervix Installed

NOTE: Lightly lubricate the dynamic cervix with the cottonseed oil provided to ensure the fetus will pass through without damaging the cervix.

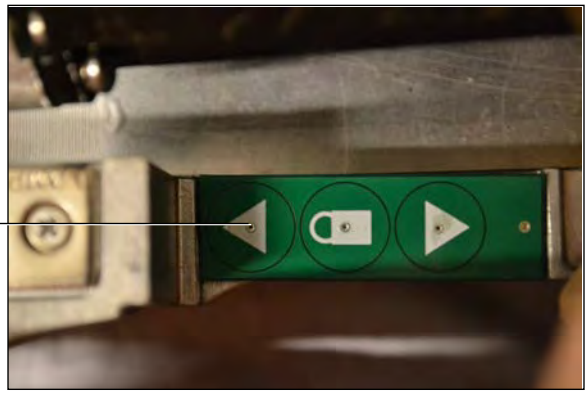
The uterine funnel with dynamic cervix is now ready for use.

Loading the Fetus - Delivery

NOTE: Prior to loading the fetus, ensure that the descent mechanism is properly returned to the "Home" position. Failure to do so will require the user to reload the fetus.

To manually return the rotation ring to the Home position:

1. Press the upward arrow button on the Gripper button pad.



The Gripper Button Pad

2. Hold for three seconds after the rotation ring reaches the top of the descent mechanism and wait until the rotation ring rotates to the "Home" position.

3. Ensure there are no kinks in the yellow tubing on the rotation ring.

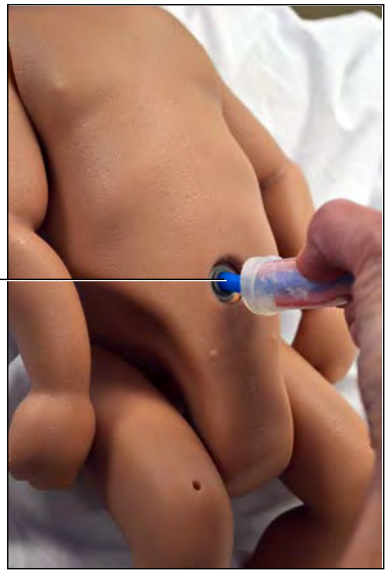
   NOTE: If the SCE does not require loading a fetus, ensure the descent mechanism is retracted to the most superior position prior to running the SCE.

Vaginal Delivery - Breech

To load the delivery fetus for a vaginal delivery in a breech presentation:

1. Ensure the rotation ring from inside the mannequin's torso is installed and returned to the "Home" position.
2. Ensure the delivery uterine funnel with dynamic cervix is installed.
3. Ensure the fetus is powered on, indicated by the illuminated power light in the umbilical opening on the front of the fetus.
4. Ensure the umbilical cord is connected to the fetus.

To attach the umbilical cord to the fetus, push one of the blue ends of the cord into the umbilical opening on the fetus.



The Umbilical Cord Attached to the Fetus

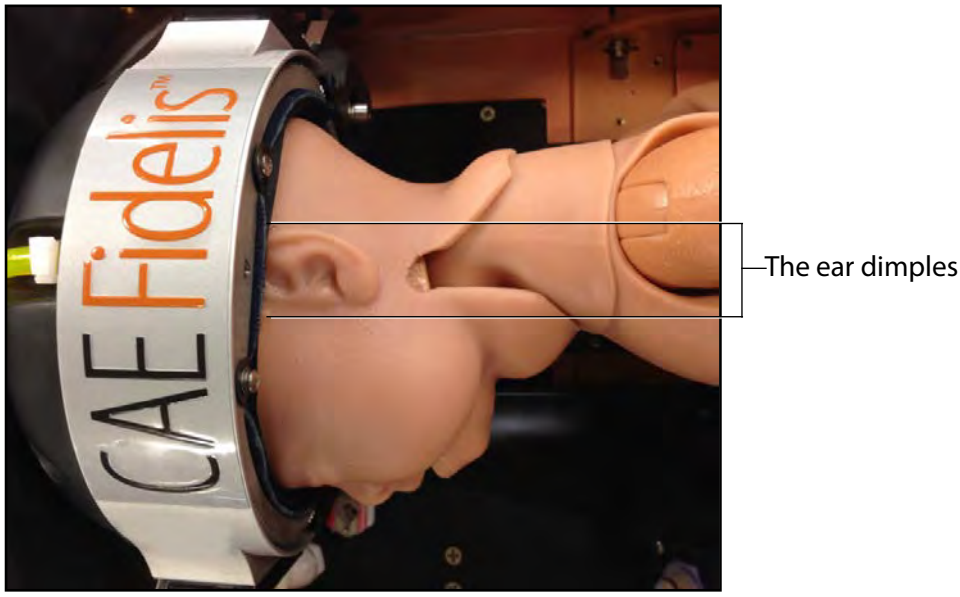
5. Lubricate the fetus' buttocks, legs, and lower torso using cottonseed oil. DO NOT lubricate under the fetus' arms.

   IMPORTANT: Wipe off (remove) any lubrication from the fetus' head.

6. Insert the fetus by placing the buttocks of the fetus into the birth canal (cervix) with legs bent towards the fetus' chest.

The Fetus in the Rotation Ring - Breech Presentation

7. Insert the head into the rotation ring approximately 0.5 cm past the two dimples near the top of the ear (this allows the ring to line up with dimples when inflated).

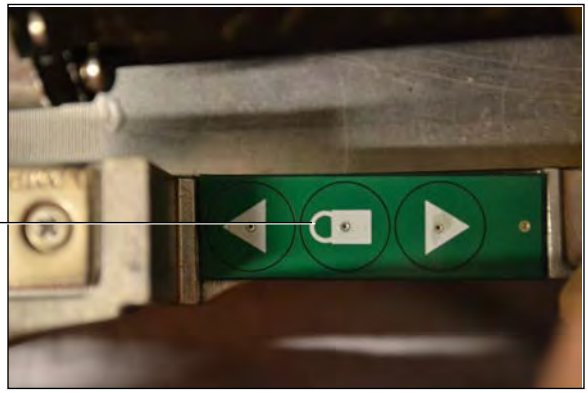


The Fetus in the Rotation Ring - Breech Presentation

NOTE: For Left Sacrum breech presentation, the fetal head should be facing the mother's right side when placed into the rotation ring.
For Right Sacrum breech presentation, the fetal head should be facing the mother's left side when placed into the rotation ring.

NOTE: Ensure fetal head skin is over (on top of) the neck skin and the neck skin is over (on top of) the fetal torso skin, as shown in picture above.

8. Inflate the rotation ring by pressing the Lock icon on the gripper button pad, located on either side of the mannequin's torso.



The Gripper Button Pad

9. Position the arms firmly adducted against the torso of the fetus with the hands of the fetus towards the back of the fetus, not the front.

The Breech Fetus in the Rotation Ring - Arms Adducted

IMPORTANT: Ensure the umbilical cord exits the placenta pouch on the same side that the fetus is facing to prevent snag during delivery.

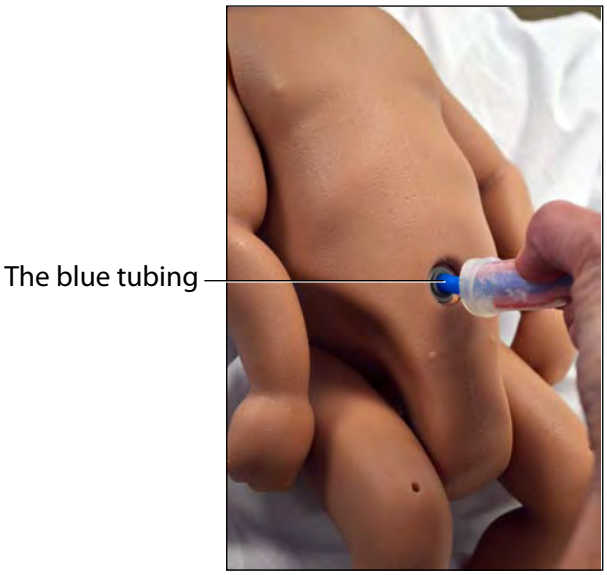
The Breech Fetus in the Rotation Ring

Vaginal Delivery - Vertex

To load the delivery fetus for a vaginal delivery in a vertex presentation:

1. Ensure the rotation ring from inside the mannequin's torso is installed and returned to the "Home" position.
2. Ensure the delivery uterine funnel with dynamic cervix is installed.
3. Ensure the fetus is powered on, indicated by the illuminated power light in the umbilical opening on the front of the fetus.
4. Ensure the umbilical cord is connected to the fetus.

To attach the umbilical cord to the fetus, push one of the blue ends of the cord into the umbilical opening on the fetus.

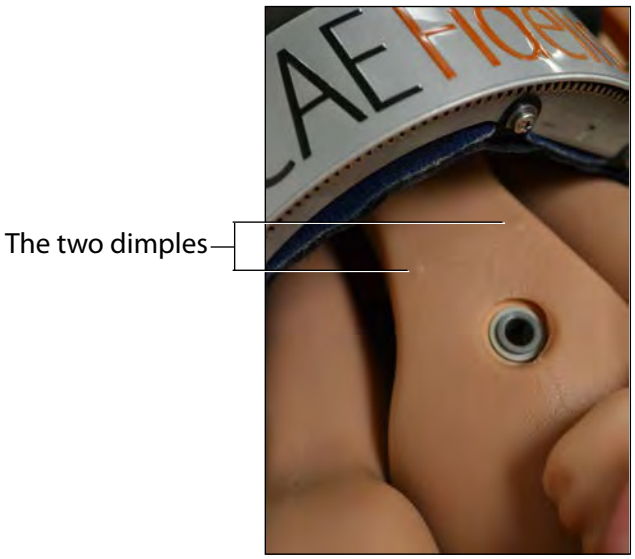


The Umbilical Cord Attached to the Fetus

5. Lubricate the fetus' head, neck, and upper torso using cottonseed oil. DO NOT lubricate under the fetus' arms.
6. Insert the fetus by placing the head against the delivery cervix and facing upright. Ensure that the fetus' arms are firmly adducted against its torso.

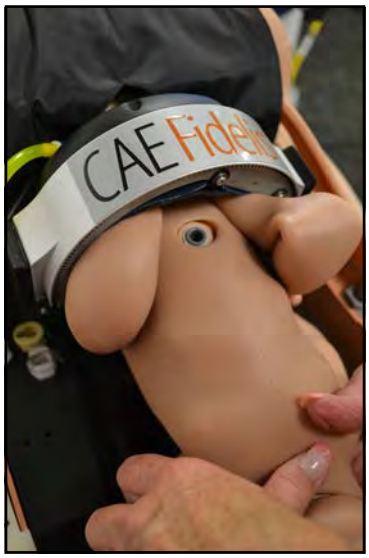
The Fetus in the Rotation Ring - Vertex Presentation

7. Insert the buttocks of the fetus into the rotation ring up to the two dimples near the umbilical cord area.



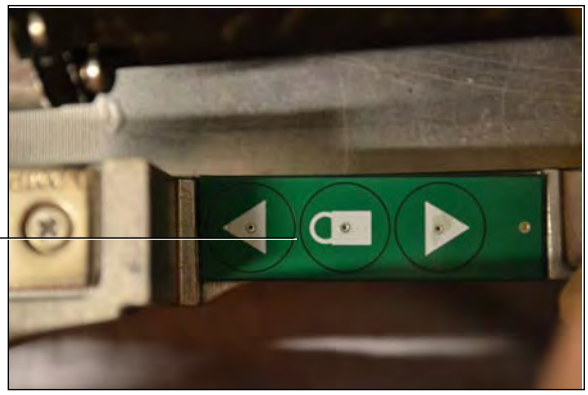
The Fetus in the Rotation Ring - Vertex Presentation

8. Bend the legs at the knees and tuck the feet into the rotation ring up to the ankles.



The Fetus in the Rotation Ring - Bent Legs

9. Inflate the rotation ring by pressing either grip button inside the mannequin's torso indicated by the lock icon.



The Gripper - Lock Icon

The fetus is now installed for a vertex vaginal delivery.

Installing the Placenta

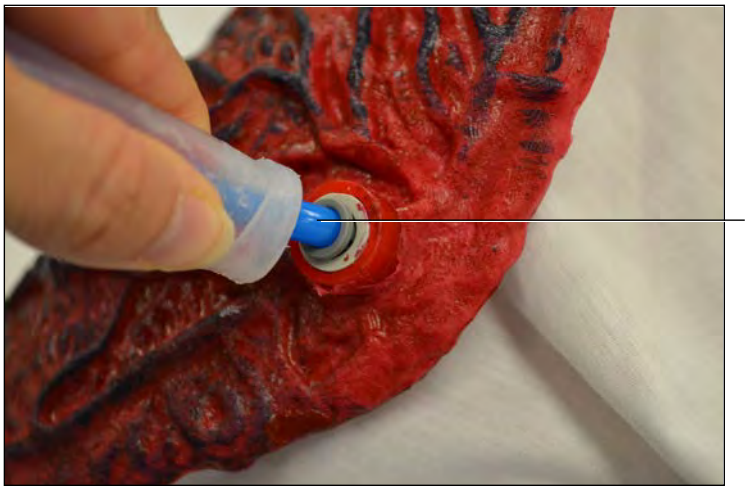
NOTE: For active and vaginal delivery configurations, prior to installing the placenta, the fetus and placenta should be connected to the umbilical cord.

The Fetus, Umbilical Cord, and Placenta Connected

For more information on attaching the umbilical card to the fetus, see *Loading the Fetus*.

To install the placenta:

1. Connect one end of the umbilical cord to the placenta by pushing the extended blue tubing into the opening on the placenta.



The Umbilical Cord Connected to the Placenta

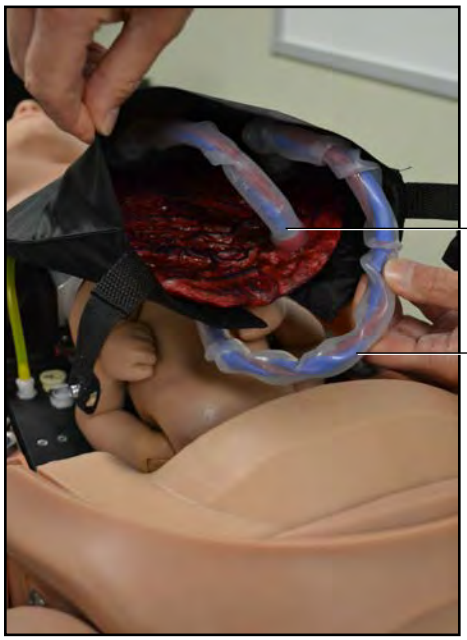
2. Lubricate the placenta and umbilical cord with cottonseed oil spray.

   If the placenta and umbilical cord connection or the umbilical cord and fetus connection detaches too easily, use rubbing alcohol to clean the blue tube of the cord and remove the cottonseed oil.

3. Place placenta in the placenta pouch with umbilical cord connection facing up and oriented towards the opening of the pouch.

   NOTE: The connection must be positioned on the left or right side, not in the center of the pouch, to ensure a snag-free delivery.

4. Coil the remaining umbilical cord inside the placental pouch ensuring that the cord exits the placenta pouch on the same side that the fetus is facing.

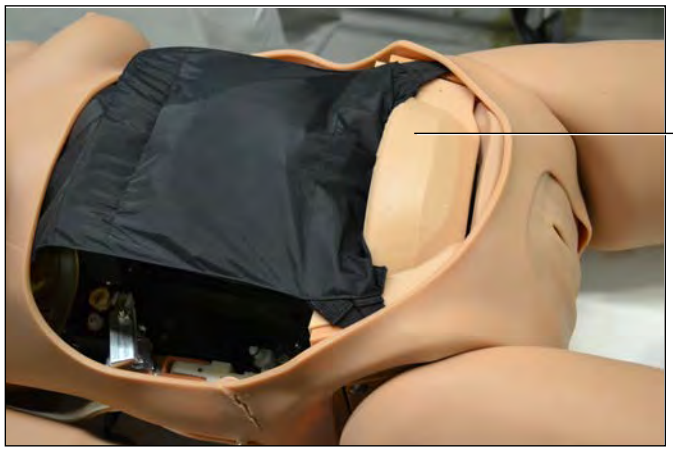


The Placenta Inside the Placenta Pouch

Vaginal Delivery Placenta Pouch Placement

For a vaginal delivery configuration:

1. Cover the fetus with the placenta pouch.
2. Ensure that the front of placenta pouch (closest to the uterine funnel) is tucked under the top part of the uterine funnel.



The Placenta Pouch Covering the Torso

3. Attach the placenta pouch to mannequin's pelvis by connecting the pouch straps to each side of the pelvis.

The Placenta Pouch Strap Connection

The placenta pouch is installed.

IMPORTANT: If the placenta and umbilical cord are not properly positioned, the simulator motor may become obstructed and begin to make a clicking or knocking sound. If the noise does not stop right away on its own, open the abdomen and ensure the placenta and umbilical cord are not jammed. Once the placenta and umbilical are in the proper position, close the abdomen and delivery will automatically resume.

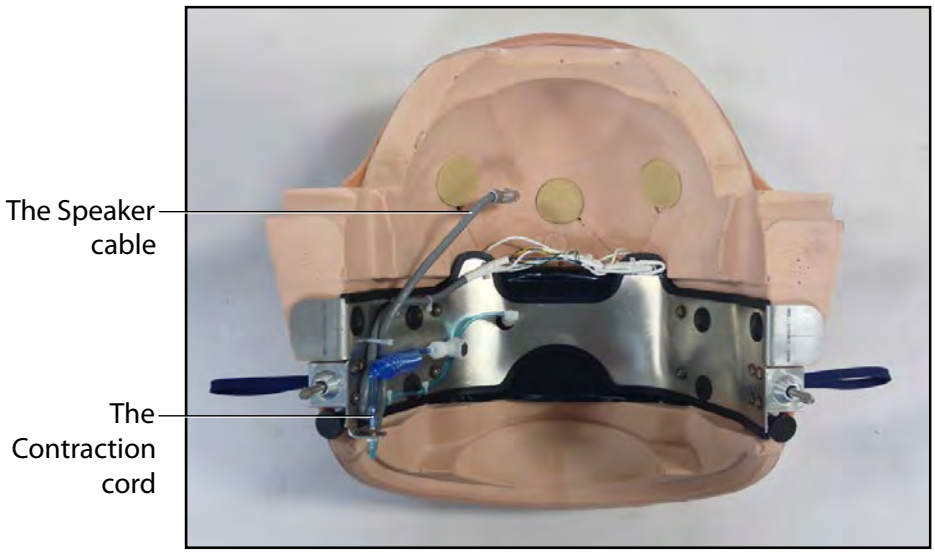
Installing the Abdomen

NOTE: Ensure the abdomen is installed on the torso whenever the mannequin is in an upright position.

Delivery Abdomen Installation

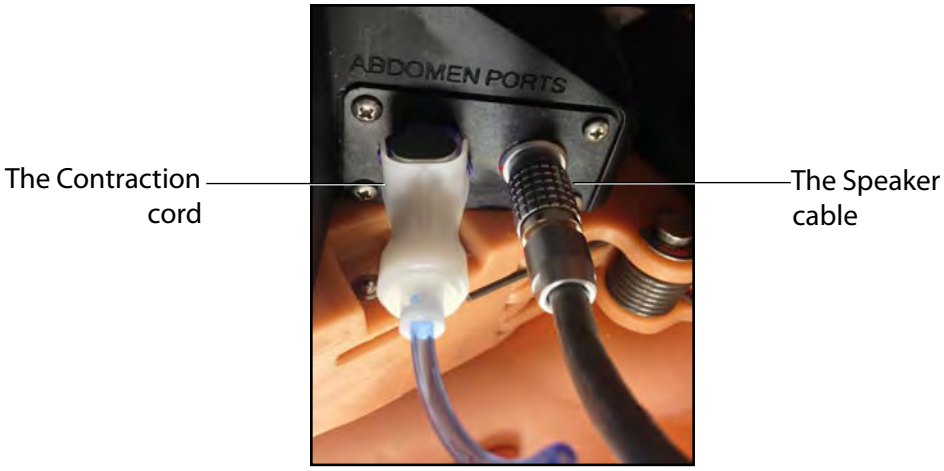
To install the delivery abdomen:

1. Locate the speaker system cable and the palpable contraction system cord inside the abdomen shell.



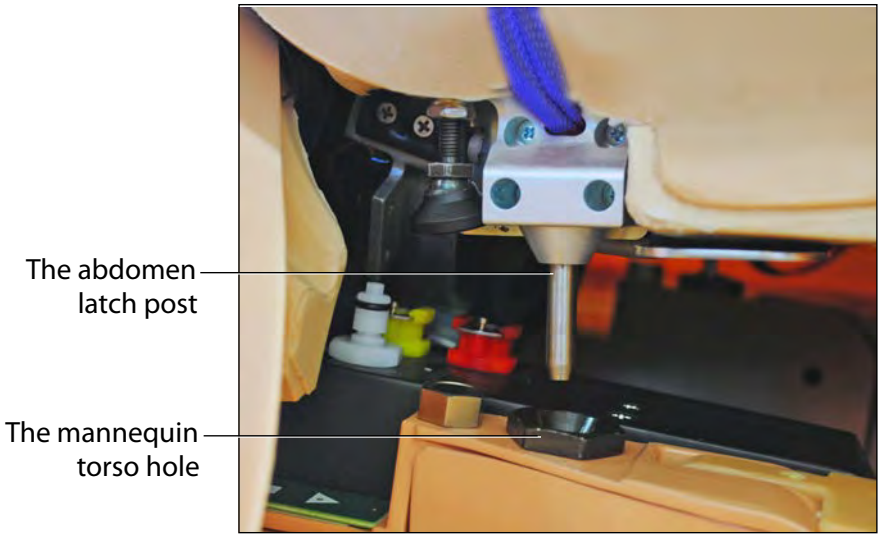
The Abdomen Contraction and Speaker Cables

2. Plug the cables into the corresponding connections inside the mannequin's torso.



The Abdomen Contraction and Speaker Connection

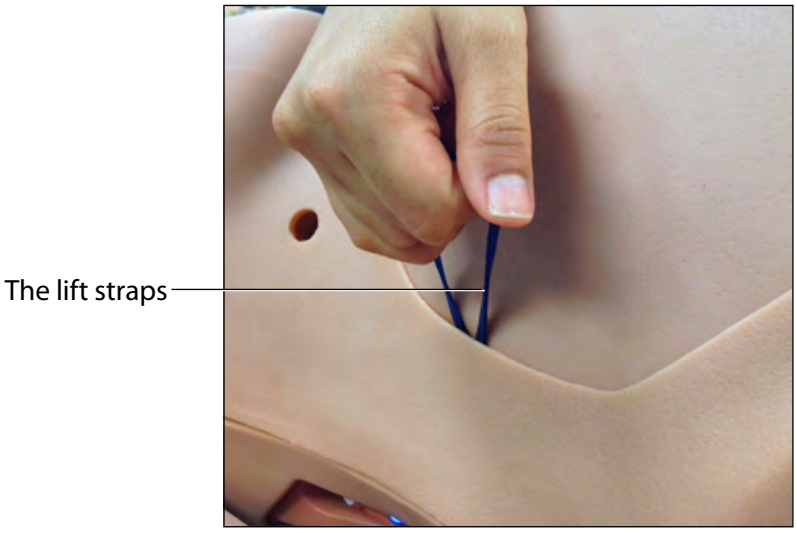
3. Latch the abdomen shell into the mannequin's torso and ensure the speaker cable is not pinched or constricted.



The Abdomen Placement

The abdomen is ready for use.

IMPORTANT: Use only the lift straps attached to the abdomen to lift and remove the abdomen from the mannequin's torso.

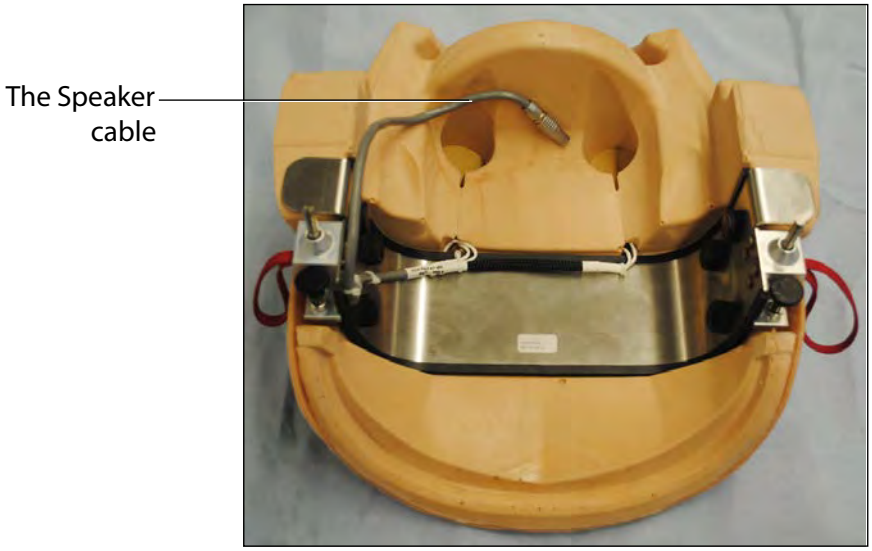


The Abdomen Removal

Non-Gravid (Non-Pregnant) Abdomen

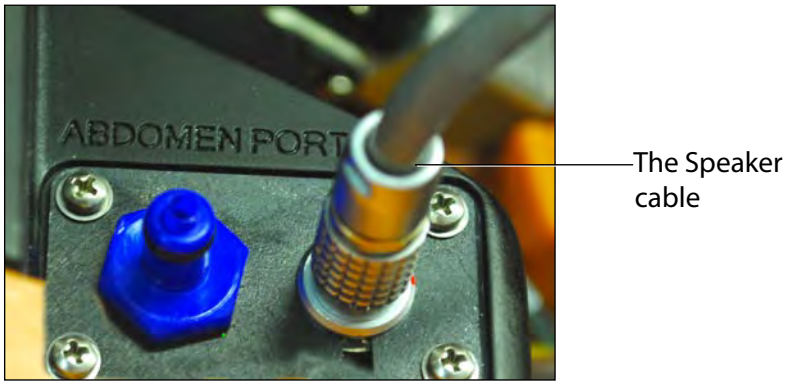
IMPORTANT: Ensure the birthing mechanism on the mannequin is at the highest position and the Leopold Tub is installed (for support).

1. Locate the speaker system cable inside the abdomen shell.



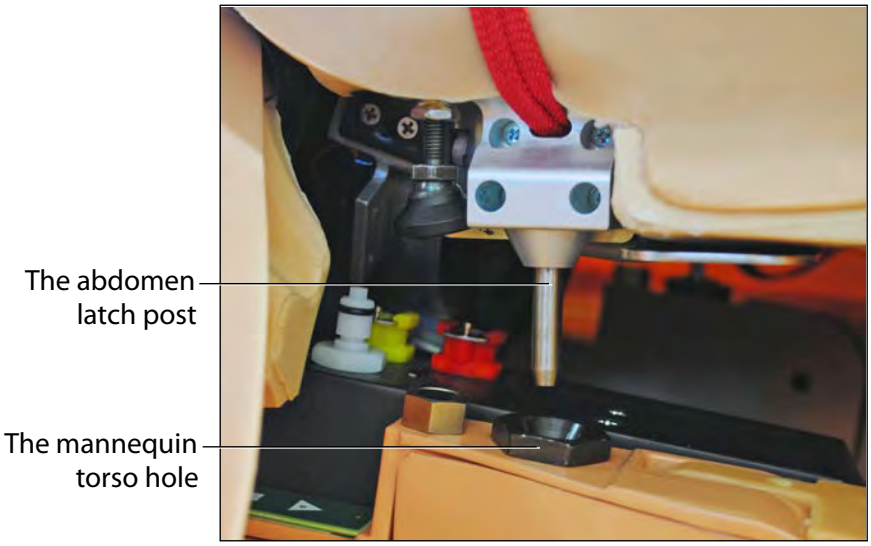
The Non-Gravid Abdomen Speaker Cable

2. Plug the cable into the corresponding connection inside the mannequin's torso.



The Abdomen Speaker Connection

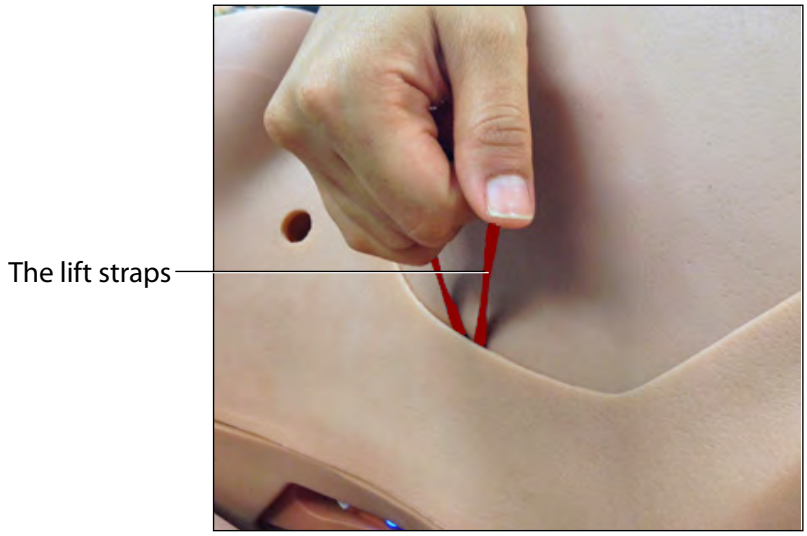
3. Latch the abdomen shell into the mannequin's torso and ensure the speaker cable is not pinched or constricted.



The Abdomen Placement

The abdomen is ready for use.

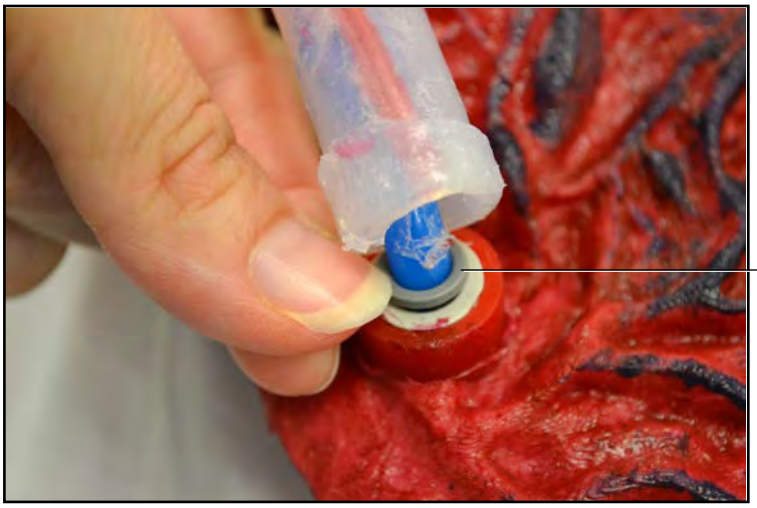
IMPORTANT: Use only the lift straps attached to the abdomen to lift and remove the abdomen from the mannequin's torso.



The Abdomen Removal

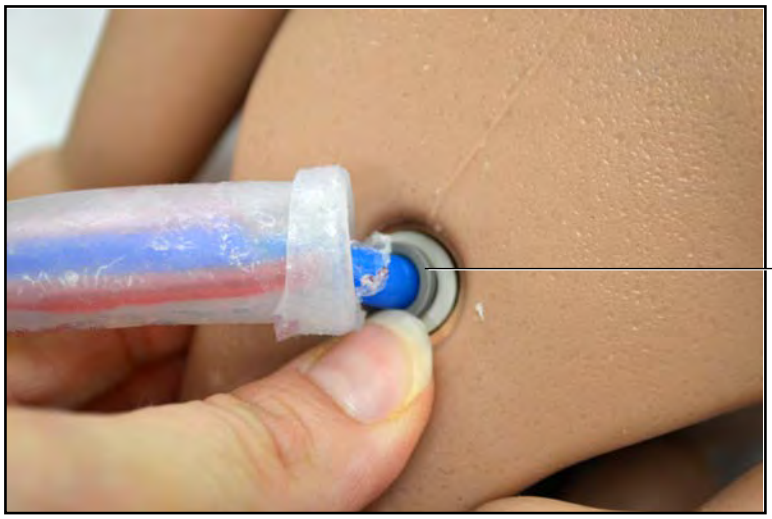
Disconnecting the Umbilical Cord

To disconnect the umbilical cord from placenta, push down on the gray disconnection ring and pull the blue tubing out of the connection port.



The Umbilical Cord Placenta Disconnection

To disconnect the umbilical cord from the fetus, push down on the gray disconnection ring and pull the blue tubing out of the connection port.



The Umbilical Cord Fetus Disconnection

POSTPARTUM

Filling the Blood Tank

The blood tank has a 2 liter fluid capacity. There are two ways to fill it:

1. Internally (e.g., when the blood tank has been installed in the mannequin)
2. Externally using the Blood Tank Adapter accessory (e.g., when the blood tank needs to be prepared prior to starting a simulation to decrease the time spent changing the configuration from delivery to postpartum)

Internal Filling

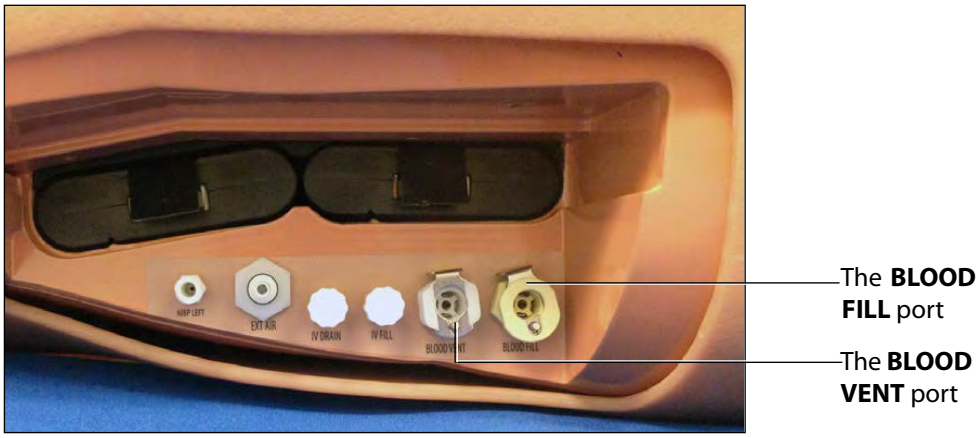
To fill the blood tank after it is installed in the mannequin:

1. Fill the trauma fill tank with a simulated blood preparation (holds up to 7.6 liters).

The Trauma Fill Tank

2. Connect the trauma fill tank to the ports located on the left side of the mannequin.

The blue tube connects to the **BLOOD FILL** port and the yellow tube connects to the **BLOOD VENT** port.



The Battery Compartment and Ports

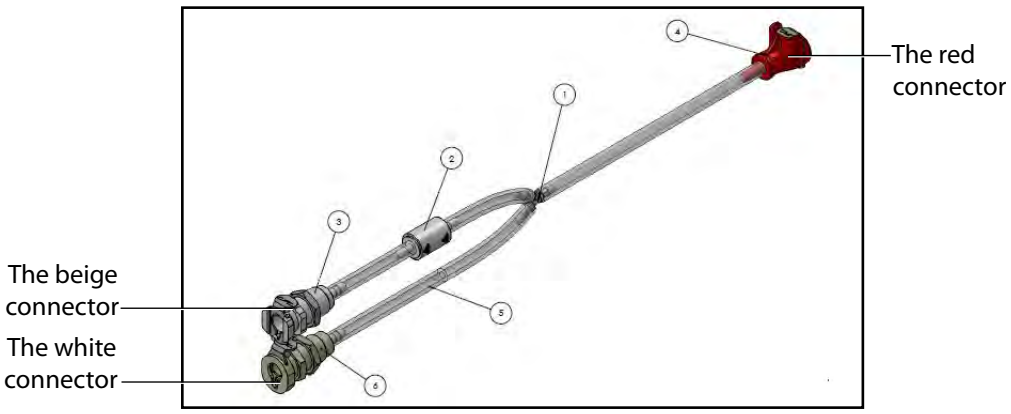
3. Ensure the yellow pressure relief knob on the trauma fill tank is closed and pressurize the trauma fill tank by pumping no more than 20 times.
4. Wait until there is good return of fluid in the reclaim bottle (will start dripping slowly first then accelerate to an almost constant flow; this may take a few minutes). A constant flow into the reclaim bottle indicates the blood tank is full.
5. Disconnect the trauma fill tank from the mannequin and depressurize.

   The blood tank is ready for use.

External Filling

To fill the blood tank before it is installed in the mannequin:

1. Locate the Blood Tank Adapter accessory.



The Blood Tank Adapter Accessory

2. Connect the red connector to the blood tank outlet (clear tubing located at the top of the blood tank).
3. Locate the trauma fill tank.

The Trauma Fill Tank

4. Connect the beige connector to the trauma fill tank **BLOOD OUT** port (blue tube).
5. Connect the white connector to the trauma fill tank overflow port (yellow tube).
6. Fill tank as per above instruction for internal filling (steps 3 and 4). When the tank is full, disconnect all ports.

   The filled blood tank is now filled and ready to be installed in the mannequin.

Installing the Blood Tank

To install the blood tank:

1. Ensure the rotation ring from inside the mannequin's torso is removed.

   CAUTION: Do not place pressure or any object on the rotation ring support arms while the rotation ring is removed.

The Mannequin's Torso - Rotation Ring Removed

2. Ensure no other birth canal is installed within the standard delivery birth canal.

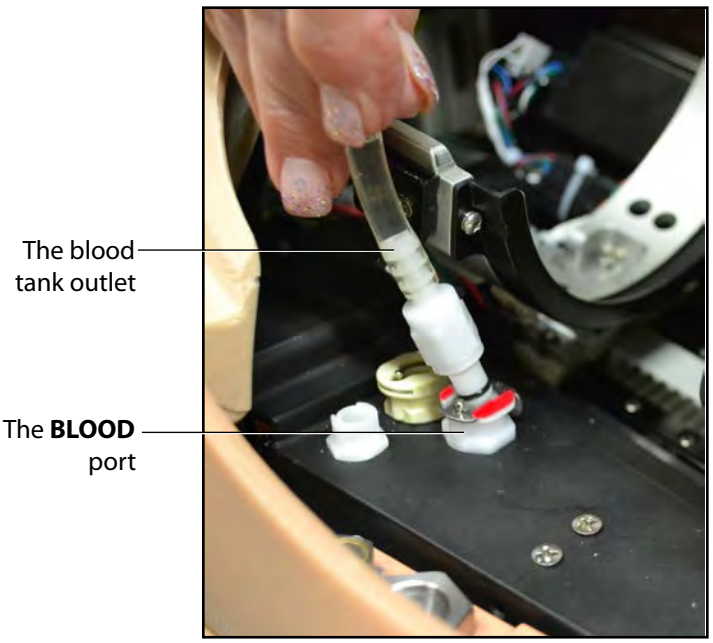
   NOTE: The standard birth canal is installed by default.

3. Connect the clear blue tube located at the bottom of the blood tank to the **BLEEDING** tube inside the mannequin.

The BLEEDING Tube Connection

NOTE: The **BLEEDING** tube is a clear blue tube located on the left side of the mannequin's torso.

4. Connect the blood tank outlet (clear tube located at the top of the blood tank) to the mannequin **BLOOD** port on the baffle.



The Blood Tank Outlet and Blood Port

5. Place the blood tank inside the mannequin's torso.
6. Place the placenta pouch on top of the bleeding tank with no placenta or umbilical cord inside.

Installing the Boggy/Contracted Uterus With Bag

IMPORTANT: Ensure the blood tank is installed with the use of the postpartum boggy/contracted uterus, whether or not the bleeding function is used. The postpartum boggy/contracted uterus with bag is placed inside the abdominal cavity over the blood tank.

NOTE: The uterus bag should be installed and used with the boggy/postpartum uterus at all times.

The uterus has two connections:

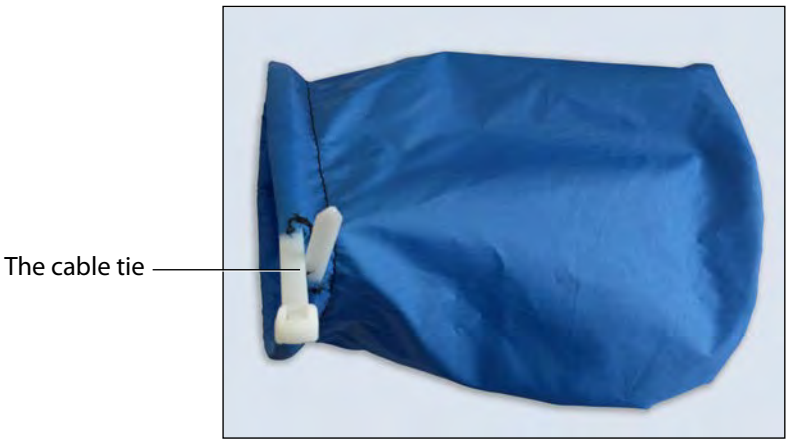
- A pneumatic connection to inflate the uterus and create the perception of a boggy uterus.
- A bleed connection to support vaginal bleeding.

IMPORTANT: Follow these configuration instructions carefully to ensure that no fluid infiltrates the electrical area inside the mannequin and damages the simulator.

To install the boggy/contracted uterus:

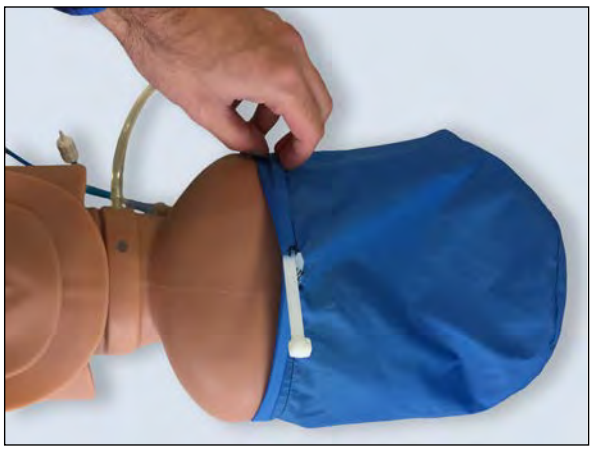
1. Ensure the rotation ring is removed from the mannequin's torso.
2. Ensure the blood tank is installed.
3. Ensure the placenta pouch is placed on top of the blood tank.
4. Thread the cable tie completely through the bag opening.

   NOTE: The cable tie may also be threaded through the bag after installing the bag on the uterus.



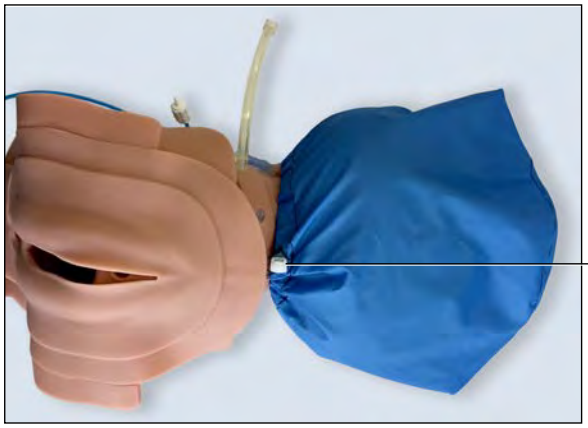
The Boggy/Contracted Uterus Bag

5. Insert the boggy/contracted uterus fully into the bag, up to the tubing, to fit snugly. Do not cover tubing.



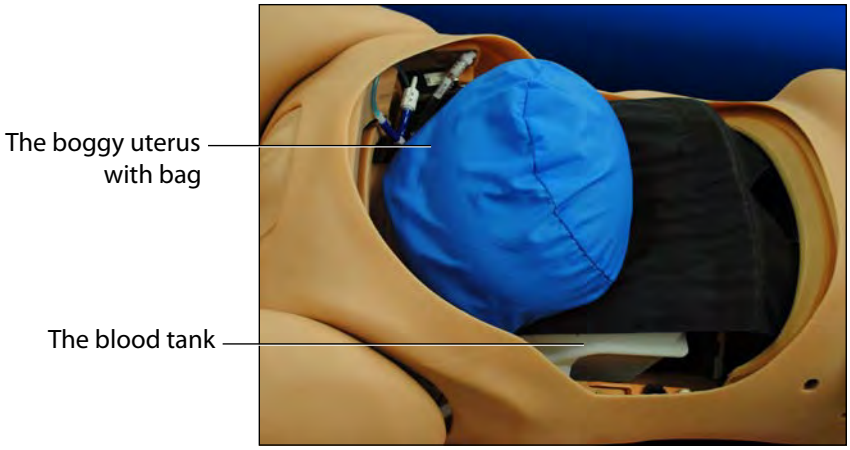
The Boggy/Contracted Uterus Bag Installation

a. Ensure cable tie is threaded through the bag opening and tightened snugly to hold bag in place. Excess length of cable tie can be cut off.



The Boggy/Contracted Uterus Bag Installation

6. Place the boggy/contracted uterus with bag in the abdominal cavity over the placenta pouch. Ensure the bag is pulled snug with any slack tucked under the uterus.



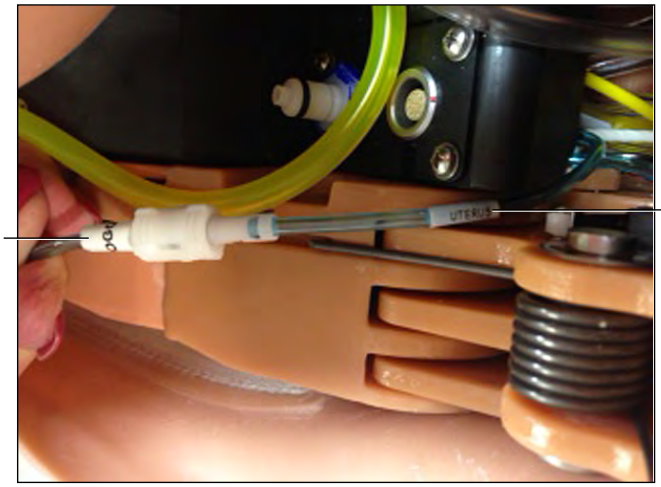
The Boggy/Contracted Uterus Installed With Bag

NOTE: If the boggy/contracted uterus is already installed in the mannequin, be sure to install the bag per instructions above.

The Boggy/Contracted Uterus

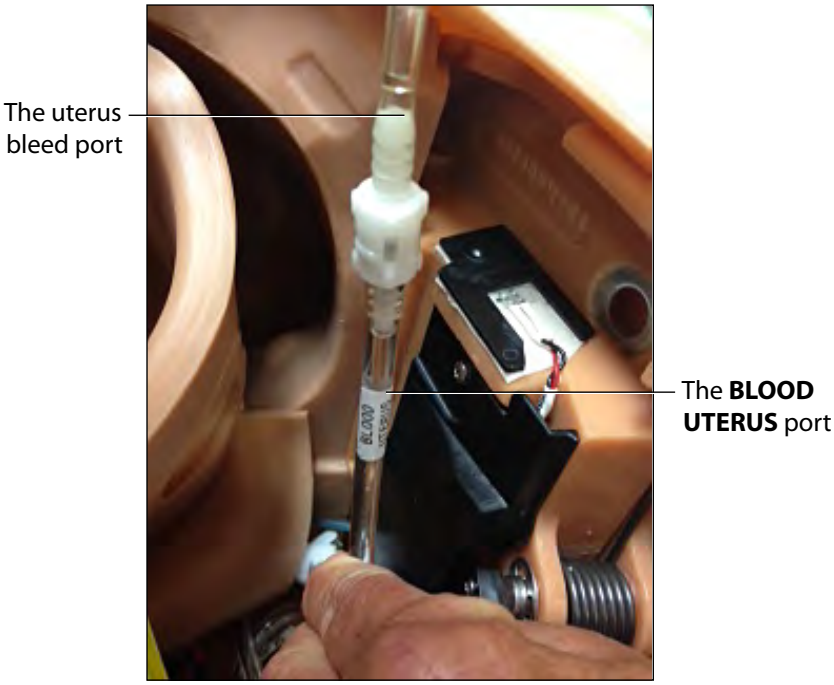
NOTE: The bag style and color may vary.

7. Connect the uterus inflation port (clear blue tubing labeled **BOGGY**) to the mannequin **UTERUS** pneumatic port (clear blue tubing).



The Uterus Inflation Port and UTERUS Pneumatic Port

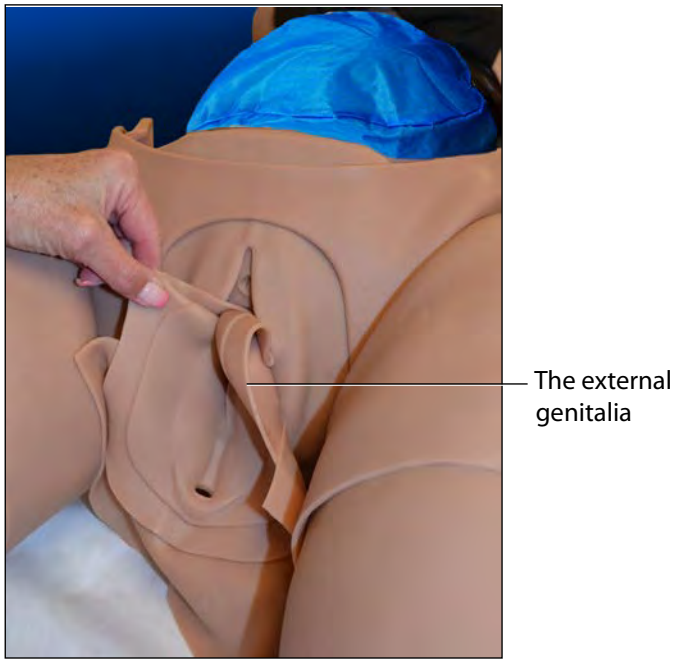
8. Connect the uterus bleed port (clear tubing) to the mannequin **BLOOD UTERUS** port (clear tube).



The Uterus Bleed Port and BLOOD UTERUS Port

9. Lightly lubricate the birth canal and the mannequin's external genitalia using the cottonseed oil provided.
10. Lubricate the boggy/contracted uterus external genitalia.

11. Gather the boggy/contracted uterus external genitalia fully inside the mannequin's torso and push the skin through the birth canal.



The Boggy/Contracted Uterus with External Genitalia

12. Tuck in the labia and position the uterus genitalia smoothly over the standard birth canal.
13. Tuck the edge skin of the uterus under the torso skin around the genitalia opening.
14. Push the external genitalia flap under the buttocks and attach it to the rectal plug.

    NOTE: CAE Healthcare recommends placing the mannequin in McRoberts position to perform this procedure.

15. Install the Backplate without the Cervix Retention Plate.

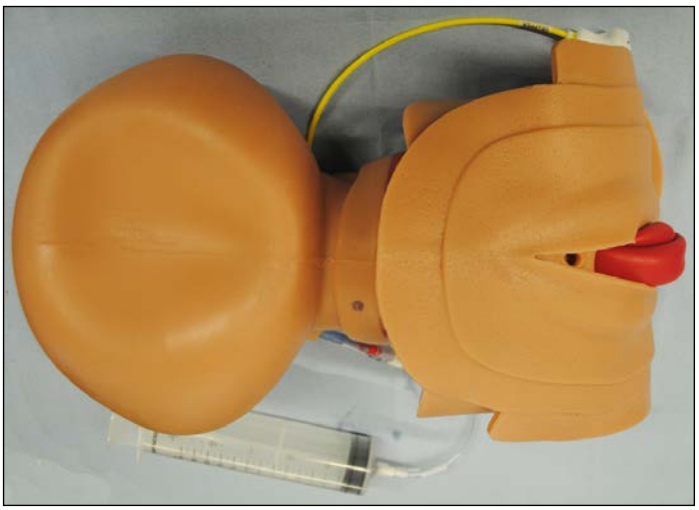
    NOTE: Ensure the arrows on the top of the plate point towards the mannequin's feet.

Installing the Postpartum Invertible Uterus

NOTE: The postpartum invertible uterus is soft and has a reversion lock collar in the cervical area (unlike the Boggy/Contracted uterus).

The invertible uterus is placed inside the abdominal cavity over the placenta pouch on the blood tank and has two connections:

- A manual pneumatic connection to inflate the uterus and help with inversion (syringe attachment).
- A reversion lock collar pneumatic line connection that prevents reversion when desired (yellow Gripper line).



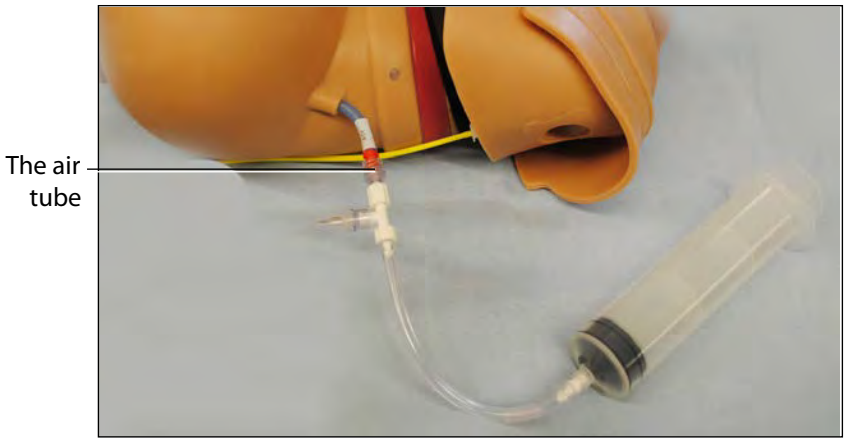
The Invertible Uterus

NOTE: For ease of installation, it is recommended that the uterus be inverted prior to installing in the mannequin. However, the uterus may be inverted after installing in the mannequin.

To configure and install the invertible uterus:

1. Connect the provided 140 mL syringe to the air tube on the uterus.

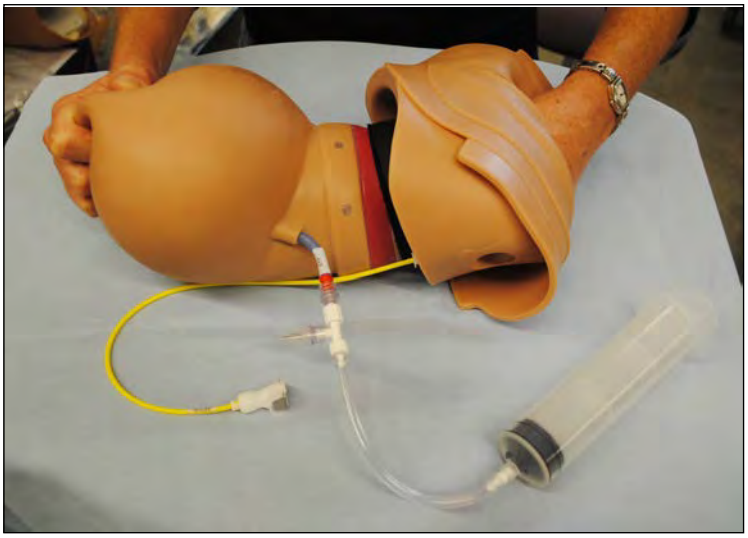
   NOTE: Leave the syringe attached during preparation and installation.



The Syringe Air Tube Connection

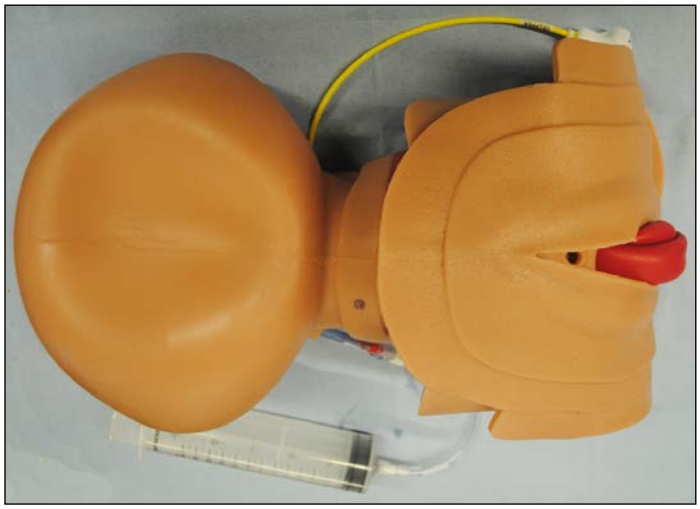
2. Depress and pull the syringe plunger until uterus inflates to a rounded shape (approximately 10 times).
3. Lubricate the inside of the vaginal canal with cottonseed oil.
4. Use one hand to gently squeeze the uterus. Use the other hand to reach in the vaginal canal and grab the internal liner (squeezing the uterus creates air pressure to help pull out the liner).

   TIP: A second person holding the uterus may be helpful.



The Invertible Uterus

5. Pull out the liner to invert the uterus, do not extend more than two inches outside the labia.



The Invertible Uterus

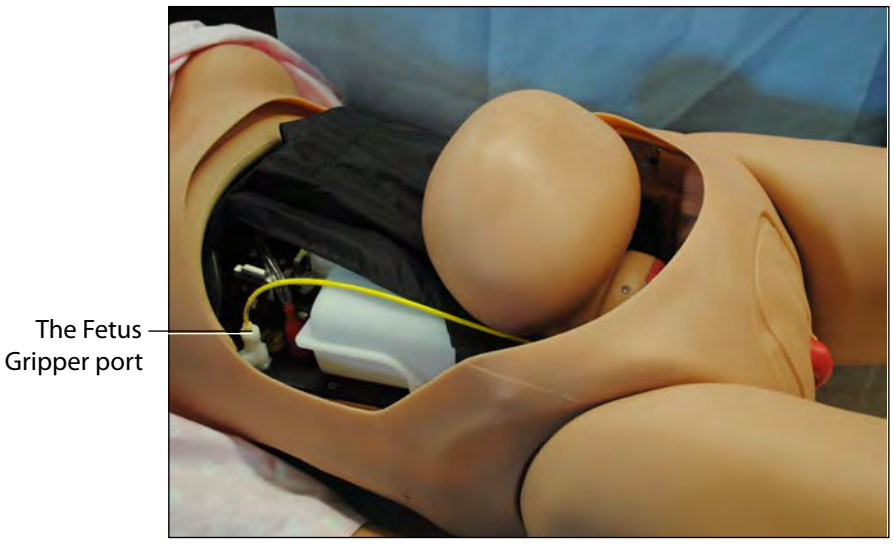
6. Ensure the birthing mechanism on the mannequin is at the highest position and the rotation ring is removed from the mannequin's torso.
7. Ensure the blood tank is installed with the placenta pouch placed on top of the blood tank.
8. Place the invertible uterus in the abdominal cavity, over the placenta pouch on the blood tank, and into the vaginal opening.
9. Lock the uterus in place with the static cervix backplate.

The Invertible Uterus installed in Mannequin

10. Lightly lubricate the birth canal and labia using the cottonseed oil provided.
11. Lubricate the uterus external genitalia.
12. Gather the invertible uterus external genitalia fully inside the mannequin's torso and push the skin through the birth canal until the genitalia is completely on the outside.
13. Tuck in the labia and position the uterus external genitalia smoothly over the standard birth canal.
14. Tuck the edge skin of the uterus external genitalia under the torso skin around the genitalia opening.

The Invertible Uterus with External Genitalia

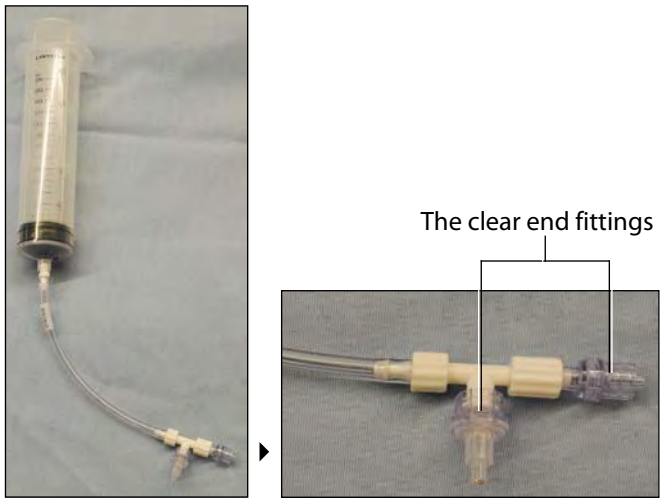
15. Connect the reversion lock collar pneumatic line (yellow Gripper line) to the mannequin Fetus Gripper port.



The Invertible Uterus Installed In Mannequin

16. Remove the syringe allowing uterus to slowly deflate. Empty any air from the inverted portion and ensure correct positioning.

    IMPORTANT: The clear end fittings must remain attached to the syringe tubing.



The Syringe

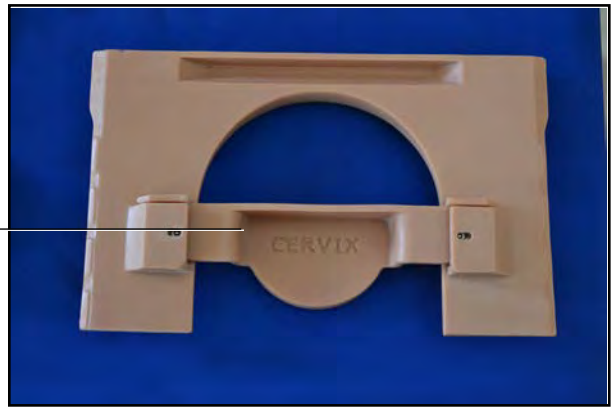
17. Install the prepartum abdomen.

Postpartum Backplate Installation

To install the backplate for a postpartum SCE configuration:

NOTE: Ensure the blood tank and either the boggy/contracted uterus with bag or the invertible uterus are installed prior to performing the backplate installation.

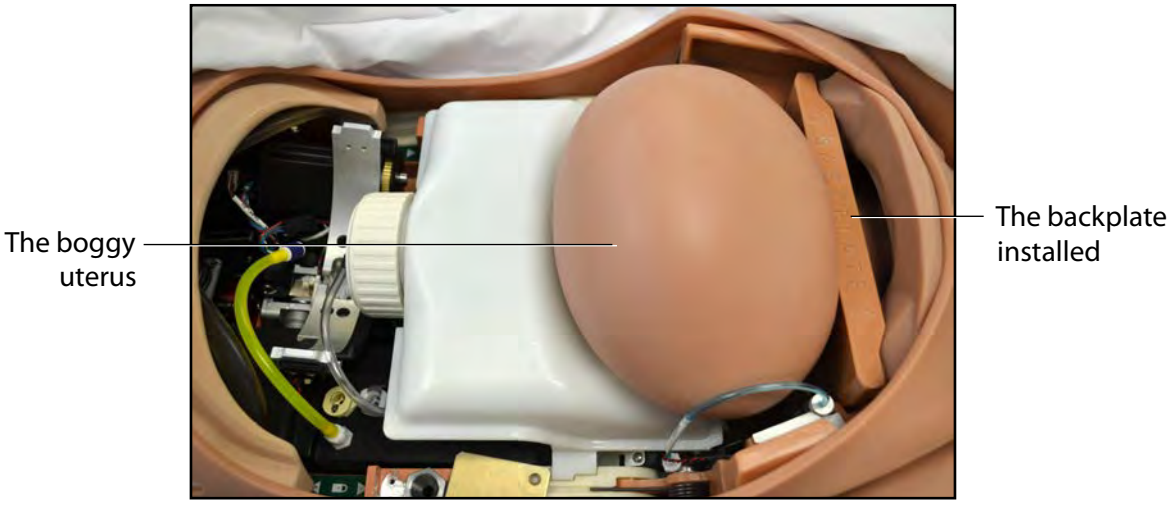
1. Remove the cervix retention plate located in the center of the backplate by lifting and sliding the retention plate out of the backplate.



The Backplate

2. Install the backplate without the cervix retention plate over the uterus to hold it in place.

   NOTE: Ensure the arrows on the top of the plate point towards the mannequin's feet.



The Mannequin's Torso

IMPORTANT: The boggy/contracted uterus bag should be installed and used with the boggy/postpartum uterus at all times.

The Boggy/Contracted Uterus Installed With Bag

The backplate is now installed for a postpartum SCE.

Using Müse

The Müse software is a browser-based application that can communicate directly with the simulator.

With the software, users can run SCEs, create scenarios and SCEs, import and export educational content and perform administrative functions.

NOTE: For optimal Müse performance, no other software programs should be open while Müse is running.

IMPORTANT: Only one Müse application window or tab and one TouchPro window or tab can be used per Instructor Workstation at a time.

IMPORTANT: Do NOT use any of the browser's navigational tools (i.e., back and forward buttons) while operating Müse.

Starting the Application

Once the simulator is powered on and the Instructor Workstation is connected to the simulator network, the Müse software can be launched.

To launch the software:

1. Using the Laptop or Tablet Instructor Workstation, launch the web browser.

   The Müse Start Screen appears.

The Müse Start Screen

2. Select **Müse**.

The Login screen appears.

The Müse Login Screen

The icons in the bottom left corner of the screen provide access to additional information about the software:

Clicking the **Info** icon to access the Info menu. From the Info menu, users can select from the following options:

- Select **About** to access information about the Müse software version, the type of simulator and the serial number.
- Select **User Guide** to download the user guide (English version). To access the User Guide in other languages, please visit www.caehealthcare.com and click the **Support** link.
- Select **Support** for CAE Healthcare Support contact information.

Click the globe-shaped **Language** icon in the bottom left corner to change the language of the Müse software.

3. On the Login screen, enter the **Username** and **Password** in the appropriate fields to access Müse.

The system default **Username** is *admin* and the default **Password** is *admin*.

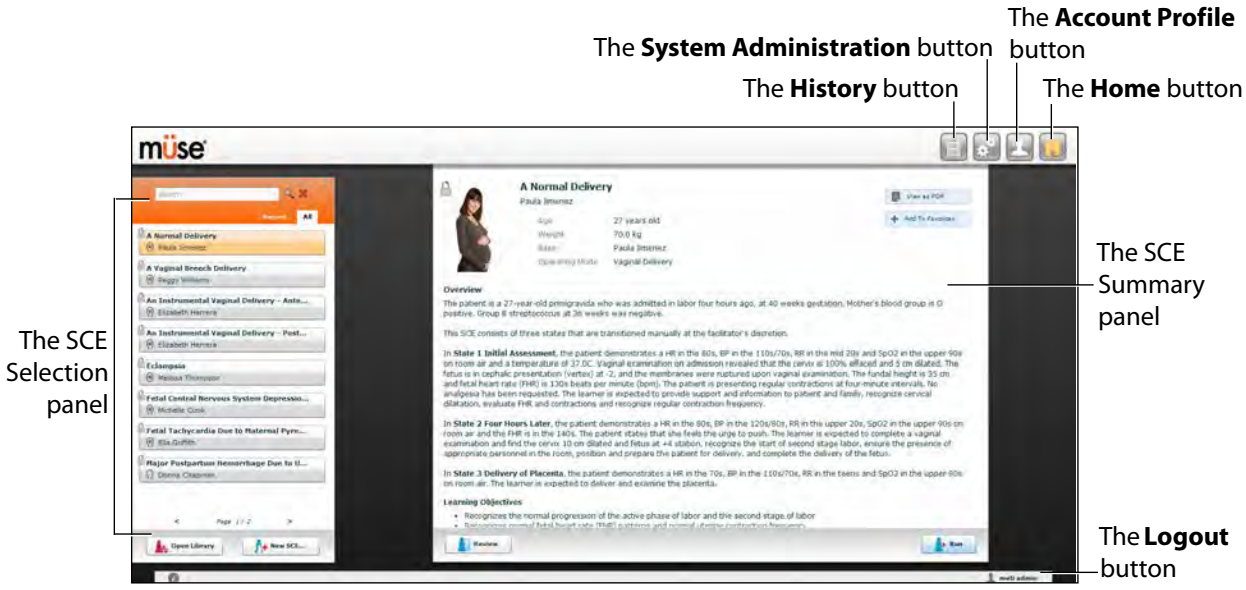
The Müse Login Fields

Müse opens to the Home page.

Navigating the Home Page

From the Home page, users can run, create, edit, search for and print SCEs.

The Home page can be accessed by clicking the **Home** button in the upper right corner of the Müse software or, on any screen without a **Home** button, by clicking the **Return** button in the upper left or right corner of the screen.

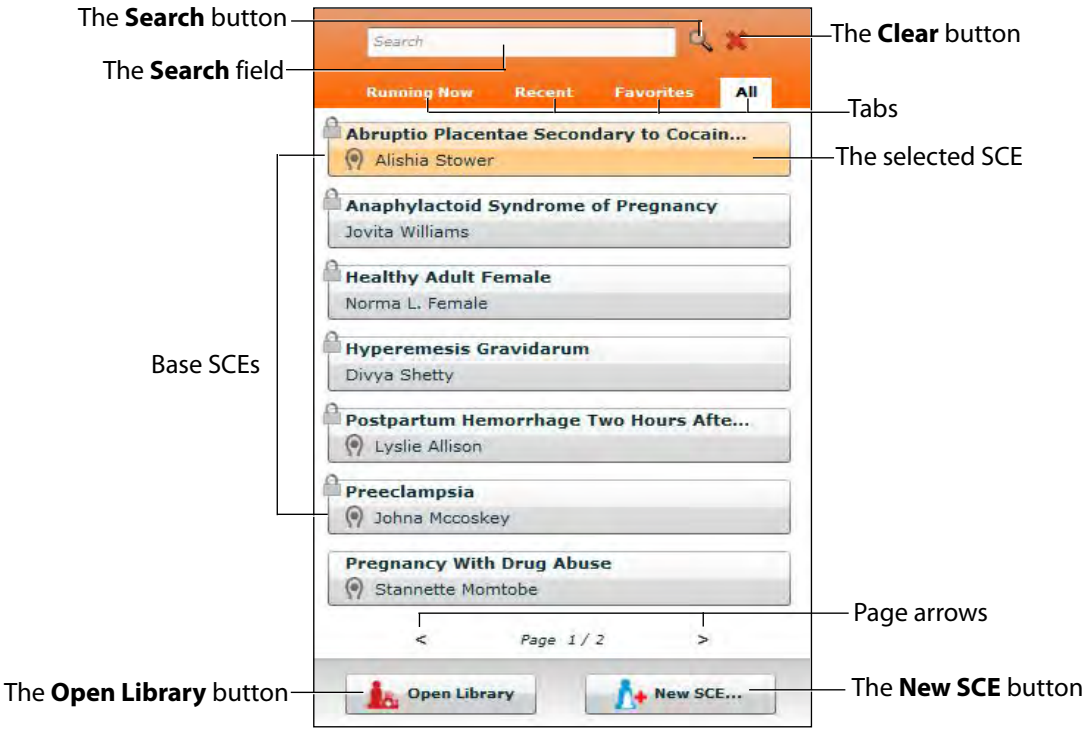


The Home Page

The SCE Selection Panel

SCEs are process tools that enable the facilitator to execute a learning strategy using simulation. Preconfigured CAE Healthcare SCEs provide an extensive overview and outline of the learning exercise and require minimal additional faculty development time for use. Each SCE is comprised of a patient and up to four scenarios.

Available SCEs appear in the SCE Selection panel on the Home page.

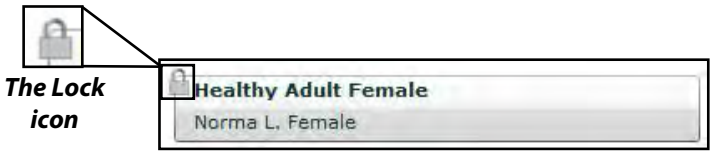


The SCE Selection Panel

The SCE Selection panel has four tabs that access SCEs: Running Now, Recent, Favorites and All.

- **Running Now** tab: Lists the SCEs that are currently running and is only available when at least one SCE is running.
- **Recent** tab: Lists all the recently run or edited SCEs.
- **Favorites** tab: Lists all SCEs that have been selected as favorites and is only displayed after favorites have been selected. To add a favorite SCE to your profile, click the **Add to Favorites** button at the top of any SCE on the Home page. Managing favorites is achieved in the Account Profile portion of the software.
- **All** tab: Lists all SCEs, including user-created SCEs and all SCEs from available learning modules.

The **Lock** icon indicates a locked SCE. Locked SCEs are installed by CAE Healthcare and cannot be deleted.



A Locked SCE

To search for an installed SCE, enter part of the name of an SCE in the **Search** field and click the **Search** button.

Click the page arrows to view additional pages of installed SCEs.

Click any SCE to select it. Once an SCE is selected, it appears in the SCE Summary panel.

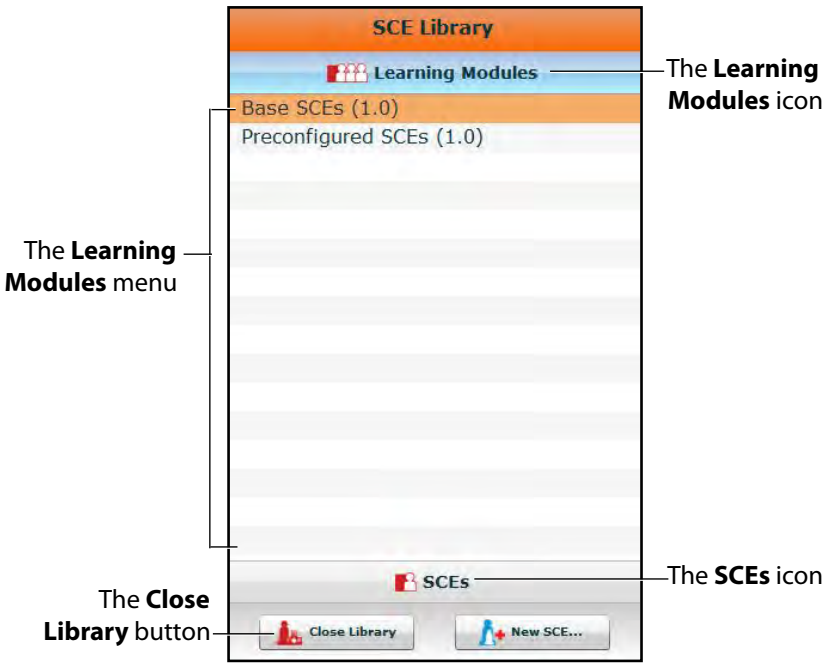
To run an SCE, click **Run** in the SCE Summary panel to execute the SCE.

To open the SCE Library, click the **Open Library** button.

To create a new SCE, click the **New SCE** button.

The SCE Library

The SCE Library lists all SCEs available on your workstation. Access SCEs from your library by clicking the **Open Library** button at the bottom of the SCE Selection panel. The SCE Library appears.



The SCE Library

The Learning Modules menu is open by default. The Learning Modules menu lists Base SCEs, Preconfigured SCEs and all installed learning applications. Click the desired learning application name to access its SCEs, or click Base SCEs or Preconfigured SCEs. The selected SCEs appear.

Clicking the **SCEs** icon reveals the SCEs menu, which lists all user-created SCEs.

Clicking the **Learning Modules** icon again reveals the Learning Modules menu.

To open an SCE, click the name of the SCE.

Click **Close Library** to exit the SCE Library.

Base SCEs

Base SCEs are fundamental SCEs with no scenarios and no progression of events. Each base SCE is designed to provide facilitators with a baseline to run simulations "on the fly" or as a physiological baseline from which to design their own SCEs.

To access a base SCE from the SCE Library, choose **Learning Modules**, then click **Base SCEs**. The base SCEs are displayed and available for selection.

Preconfigured SCEs

Preconfigured SCEs are training tools with scenarios and multiple states. They are intended to be used for learner education and training.

To access a preconfigured SCE from the SCE Library, choose **Learning Modules**, then click the name of the SCE category. The SCEs in the chosen category are displayed and available for selection.

The SCE Operating Mode Icon

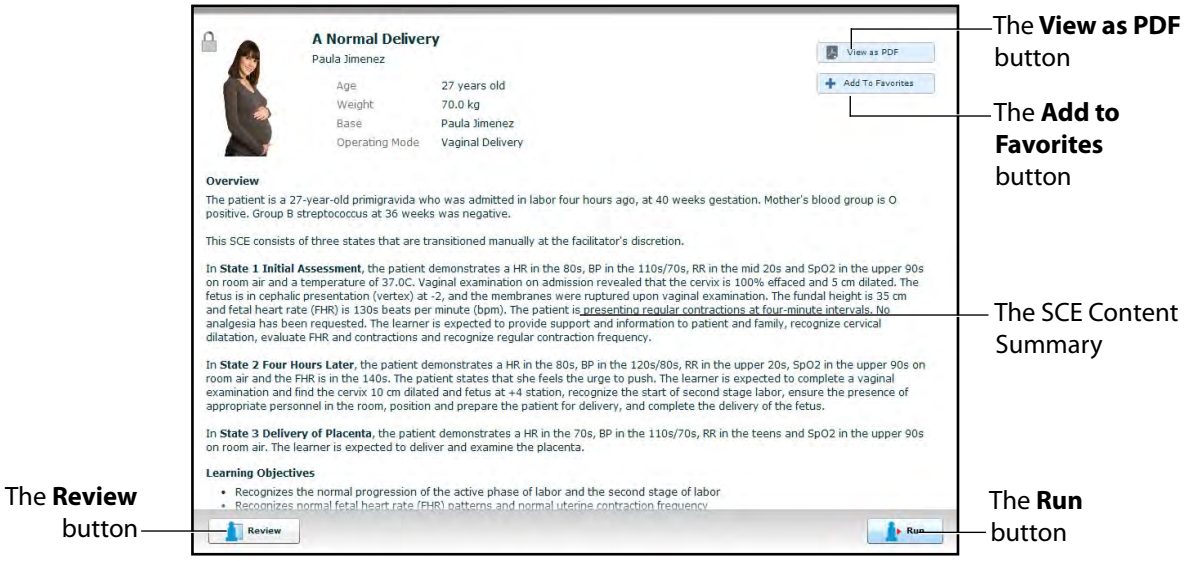
The icon next to each SCE name in the SCE Selection Panel indicates the operating mode of the SCE.

The operating mode determines the state of the maternal simulator and whether and how delivery occurs during the simulation. The operating mode also determines several simulator setup factors, such as which cervix should be used and whether the fetus should be inserted.

The SCE Selection Panel

The SCE Summary Panel

The SCE Summary Panel provides information about the selected SCE.


A Normal Delivery
Paula Jimenez
Age 27 years old
Weight 70.0 kg
Base Paula Jimenez
Operating Mode Vaginal Delivery
View as PDF
Add To Favorites
Overview
The patient is a 27-year-old primigravida who was admitted in labor four hours ago, at 40 weeks gestation. Mother's blood group is O positive. Group B streptococcus at 36 weeks was negative.
This SCE consists of three states that are transitioned manually at the facilitator's discretion.
In State 1 Initial Assessment, the patient demonstrates a HR in the 80s, BP in the 110s/70s, RR in the mid 20s and SpO2 in the upper 90s on room air and a temperature of 37.0C. Vaginal examination on admission revealed that the cervix is 100% effaced and 5 cm dilated. The fetus is in cephalic presentation (vertex) at -2, and the membranes were ruptured upon vaginal examination. The fundal height is 35 cm and fetal heart rate (FHR) is 130s beats per minute (bpm). The patient is presenting regular contractions at four-minute intervals. No analgesia has been requested. The learner is expected to provide support and information to patient and family, recognize cervical dilatation, evaluate FHR and contractions and recognize regular contraction frequency.
In State 2 Four Hours Later, the patient demonstrates a HR in the 80s, BP in the 120s/80s, RR in the upper 20s, SpO2 in the upper 90s on room air and the FHR is in the 140s. The patient states that she feels the urge to push. The learner is expected to complete a vaginal examination and find the cervix 10 cm dilated and fetus at +4 station, recognize the start of second stage labor, ensure the presence of appropriate personnel in the room, position and prepare the patient for delivery, and complete the delivery of the fetus.
In State 3 Delivery of Placenta, the patient demonstrates a HR in the 70s, BP in the 110s/70s, RR in the teens and SpO2 in the upper 90s on room air. The learner is expected to deliver and examine the placenta.
Learning Objectives
Recognizes the normal progression of the active phase of labor and the second stage of labor
Review
Run
The View as PDF button
The Add to Favorites button
The SCE Content Summary
The Review button
The Run button

The SCE Summary Panel

The **View as PDF** button can be used to generate a printable PDF of the selected SCE.

The **Add to Favorites** button adds the SCE to your Favorites list.

Clicking the **Review** button accesses the SCE Editor, which can be used to review and edit SCEs.

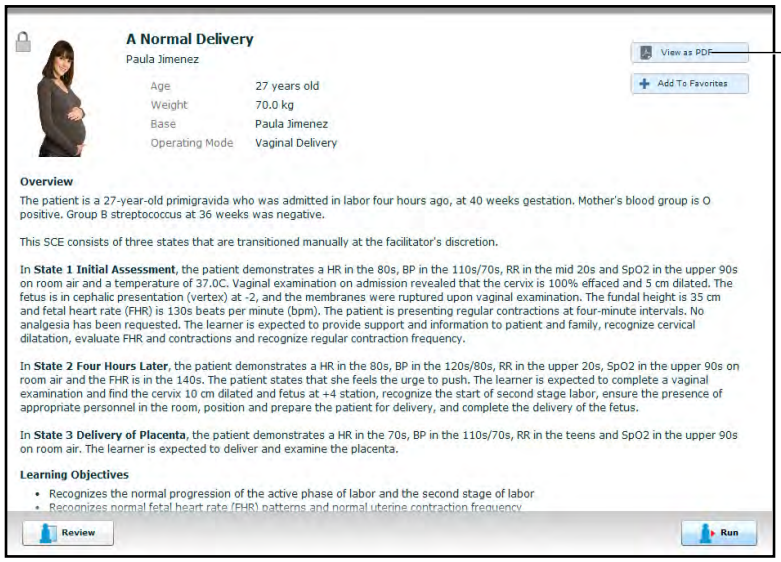
Select the **Run** button to run the SCE.

Printing SCEs

To print an SCE:

1. From the Home page, select the SCE to print.

   The SCE summary panel appears.


A Normal Delivery
Paula Jimenez
View as PDF
Add To Favorites
Age 27 years old
Weight 70.0 kg
Base Paula Jimenez
Operating Mode Vaginal Delivery
Overview
The patient is a 27-year-old primigravida who was admitted in labor four hours ago, at 40 weeks gestation. Mother's blood group is O positive. Group B streptococcus at 36 weeks was negative.
This SCE consists of three states that are transitioned manually at the facilitator's discretion.
In State 1 Initial Assessment, the patient demonstrates a HR in the 80s, BP in the 110s/70s, RR in the mid 20s and SpO2 in the upper 90s on room air and a temperature of 37.0C. Vaginal examination on admission revealed that the cervix is 100% effaced and 5 cm dilated. The fetus is in cephalic presentation (vertex) at -2, and the membranes were ruptured upon vaginal examination. The fundal height is 35 cm and fetal heart rate (FHR) is 130s beats per minute (bpm). The patient is presenting regular contractions at four-minute intervals. No analgesia has been requested. The learner is expected to provide support and information to patient and family, recognize cervical dilatation, evaluate FHR and contractions and recognize regular contraction frequency.
In State 2 Four Hours Later, the patient demonstrates a HR in the 80s, BP in the 120s/80s, RR in the upper 20s, SpO2 in the upper 90s on room air and the FHR is in the 140s. The patient states that she feels the urge to push. The learner is expected to complete a vaginal examination and find the cervix 10 cm dilated and fetus at +4 station, recognize the start of second stage labor, ensure the presence of appropriate personnel in the room, position and prepare the patient for delivery, and complete the delivery of the fetus.
In State 3 Delivery of Placenta, the patient demonstrates a HR in the 70s, BP in the 110s/70s, RR in the teens and SpO2 in the upper 90s on room air. The learner is expected to deliver and examine the placenta.
Learning Objectives
Recognizes the normal progression of the active phase of labor and the second stage of labor
Review
Run

The **View as PDF** button

The SCE Summary Panel

2. From the SCE summary panel, click the **View as PDF** button.

   A PDF of the selected SCE appears in a new browser window.

3. Save the PDF to an external storage device to print from another computer,

   OR

   To print from the Instructor Workstation, consult your network administrator for assistance connecting to a printer.

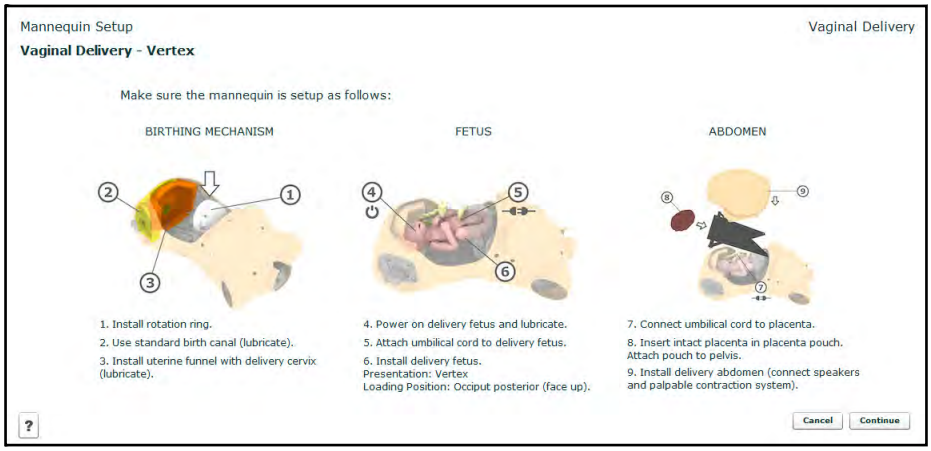
4. When finished saving or printing the PDF, close the browser window containing the PDF to return to Müse.

Running an SCE

To run an SCE, from the Home screen, select an SCE and click the **Run** button. The Run screen can also be accessed from the Scenario Designer or SCE Editor by clicking the **Run** button near the top of the screen.

The Run Button

The Mannequin Setup window appears.


Mannequin Setup
Vaginal Delivery
Vaginal Delivery - Vertex
Make sure the mannequin is setup as follows:
BIRTHING MECHANISM
FETUS
ABDOMEN
1. Install rotation ring.
2. Use standard birth canal (lubricate).
3. Install uterine funnel with delivery cervix (lubricate).
4. Power on delivery fetus and lubricate.
5. Attach umbilical cord to delivery fetus.
6. Install delivery fetus.
Presentation: Vertex
Loading Position: Occiput posterior (face up).
7. Connect umbilical cord to placenta.
8. Insert intact placenta in placenta pouch. Attach pouch to pelvis.
9. Install delivery abdomen (connect speakers and palpable contraction system).
?
Cancel
Continue

The Mannequin Setup Window

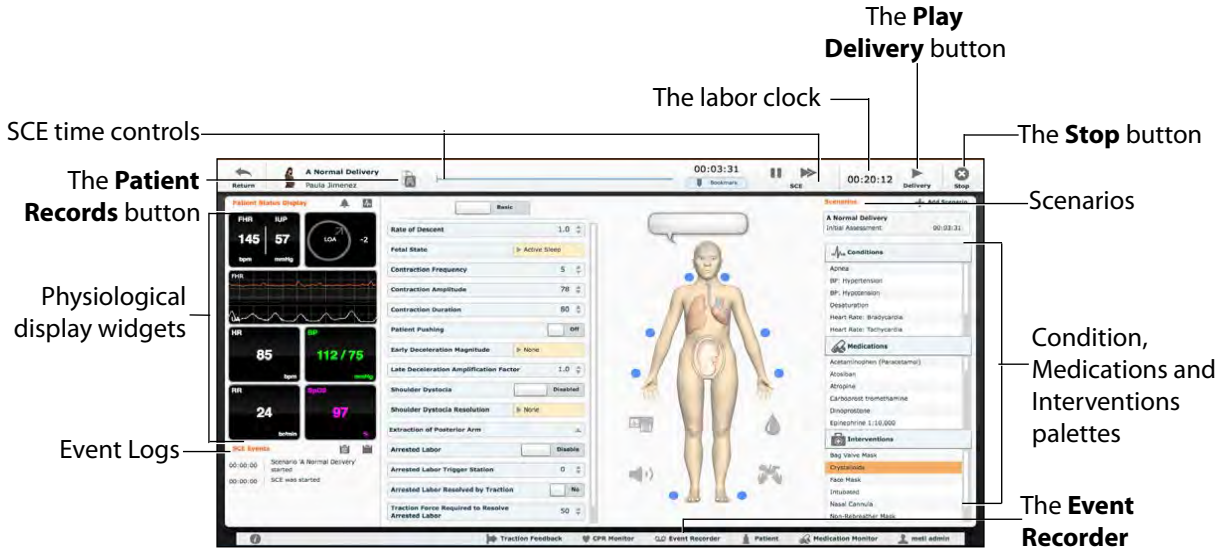
In the Mannequin Setup window, instructions appear for setting up the mannequin for the selected SCE. For detailed information on mannequin configuration, see the *Configuring the Mannequin* section of this user guide.

IMPORTANT: You MUST set up the mannequin as directed in the Mannequin Setup window before clicking **Continue**. Failure to do so may result in damage to the mannequin and undesired behavior during simulation.

Ensure the mannequin is set up correctly, and then click **Continue**.

The Run screen appears.

Prior to continuing with the simulation, wait a moment until the fetus is positioned at the desired station and position. When the Position/Station widget displays actual value instead of dashes, the simulation may begin.



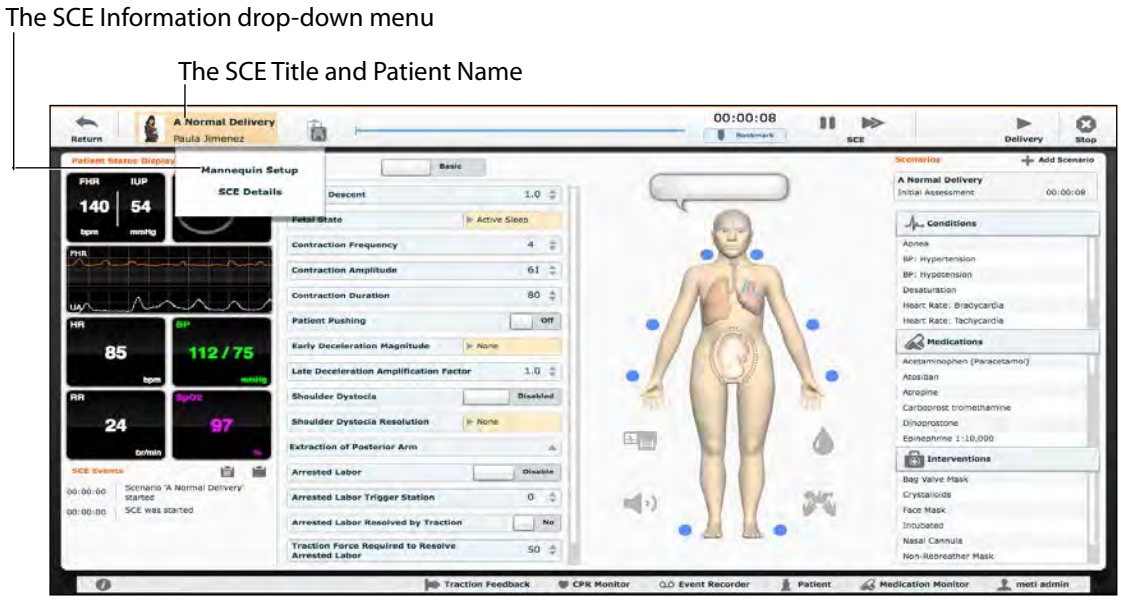
The Run Screen

NOTE: The labor clock and **Play Delivery** button only appear on SCEs that use the vaginal delivery operating mode.

From the Run screen, users can manage the SCE, perform interventions, view physiological status and events, save events as states, save the Patient and associate records with the Patient.

SCE Information

The SCE Information is a drop-down menu which is accessed by clicking the SCE title in the upper left corner of the screen.



The Run Screen

Select **Mannequin Setup** to view the Mannequin Setup screen as a popup screen. Click **Close** to exit the Mannequin Setup Window and return to the Run screen.

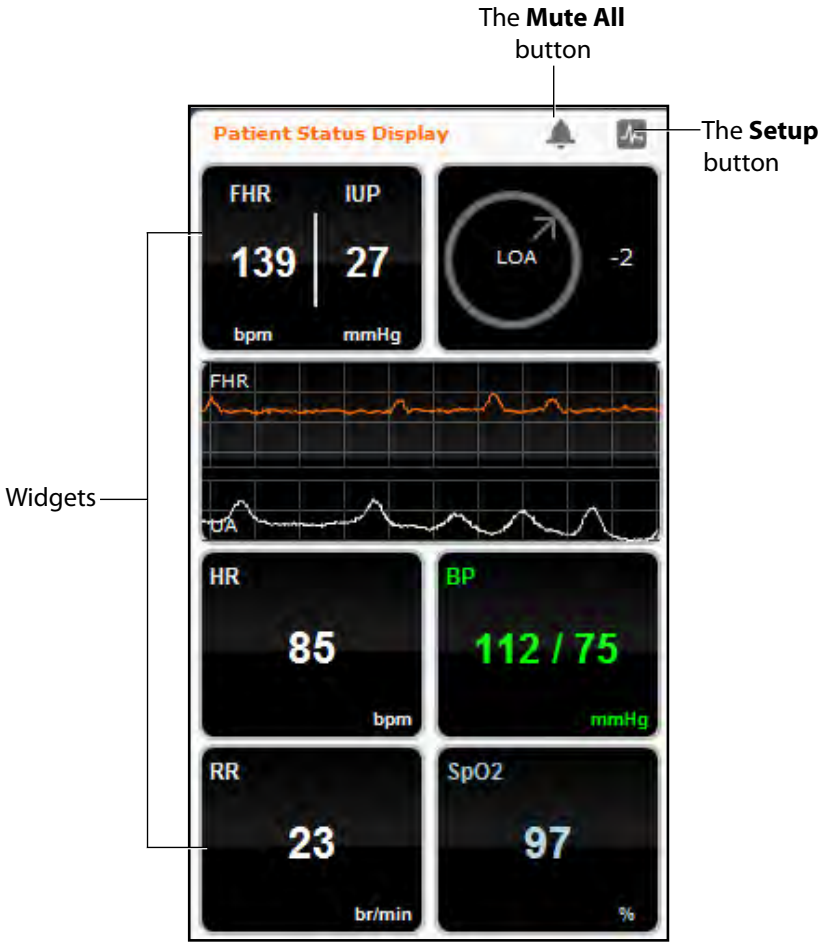
Select **SCE Details** to access the SCE Editor screen where the baseline setup, SCE Content and Configuration Setup information can be viewed. To return to the Run Screen, click the **Continue** button in the upper right corner of the screen.

Using the Patient Status Display

On the Run screen, there are widgets that display the patient's physiological status. The **Patient Status Display** widgets can be changed to reflect the user's needs.

There are eight available display spaces for the widgets. Waveform and CTG widgets utilize two display spaces.

NOTE: When running an SCE using *Norma L. Female*, the Patient Status Display widgets will show the ECG Waveform, HR, BP, MAP, RR, SpO2, and Lung Volume.



The Patient Status Display Widgets

Use the **Mute All** button to mute all Patient Status Display alarms.

To change the information displayed in a **Patient Status Display** widget, click on a desired widget. A list appears, showing all the parameters available for the selected widget type.

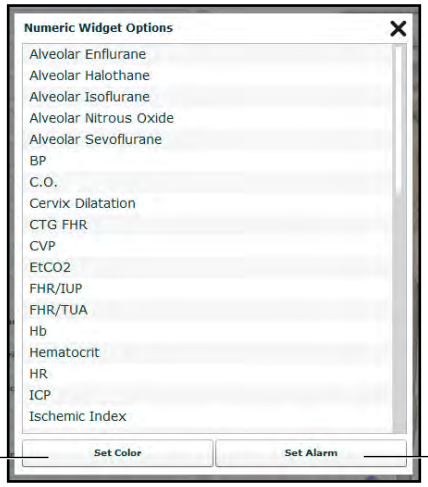
To adjust the widget layout, click the **Setup** button.

The Widget Configuration menu opens, displaying available widget types: Numeric, Waveform, Volume, CTG and Graphic.

The Widget Configuration Menu

Adjust the Patient Status Display layout by dragging a widget type from the Widget Configuration Menu and dropping it over the Patient Status Display. The new widget type replaces the old.

The Graphic Widget Display cannot be changed. This widget displays the fetal position and station, and changes during the delivery process.



The **Set Color** button

The **Set Alarm** button

The Numeric Widget Options Panel

Choose the desired option from the list and the widget changes to reflect the new selection.

From the numeric widget menu, the **Set Color** button can be used to change the display color of the widget and the **Set Alarm** button can be used to change the alarm settings for the selected widget.

NOTE: The information displayed on the CTG and Graphic widgets cannot be changed.

The Numeric Widget options that have two parameters displayed (FHR/IUP and FHR/TUA) cannot be changed.

The Event Logs

During an SCE, all software operations sensed by the simulator or entered manually (e.g., virtual defibrillation, setting a physiological parameter value) are recorded by an event entry that appears on the screen. The event entry notes what occurred and the time it happened.

The Event Logs

Displaying Patient Records

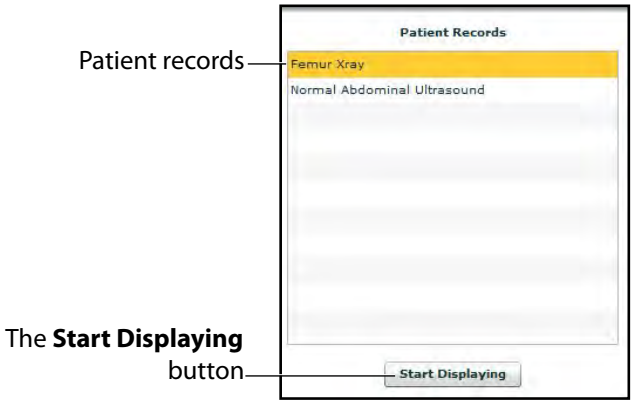
Patient records can be uploaded to Müse and displayed in the TouchPro software while an SCE is running.

To display an uploaded patient record:

1. From the Müse Run screen, click the **Patient Records** button.

The Patient Records Button

The Patient Records list appears, displaying all available patient records.



The Patient Records List

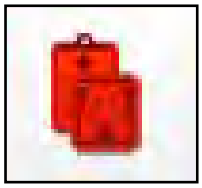
2. Select a patient record from the list.
3. Click **Start Displaying**.

   The patient record is shown in a new TouchPro web browser window.

   IMPORTANT: Ensure pop-up blocking is turned OFF in the web browser of the Instructor Workstation and any TouchPro workstations. Consult the web browser's help menu for assistance.

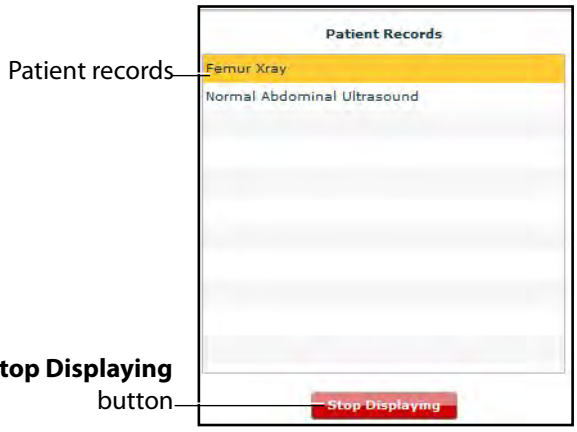
   NOTE: The web browser window containing the patient record may be minimized initially. If the window is not readily visible, click the web browser icon on the Dock (Macintosh Instructor Workstation) or Taskbar (Windows Instructor Workstation) to locate the new window.

   The **Patient Records** button turns red, indicating that a patient record is being displayed.



The Patient Records Button

The **Start Displaying** button at the bottom of the Patient Records list changes to a red **Stop Displaying** button.



The Patient Records List

To stop displaying a patient record, click **Stop Displaying** at the bottom of the Patient Records list.

To close the Patient Records list, click the **Patient Records** button. The list closes. If a patient record is being displayed, the **Patient Records** button remains red until the list is re-opened and **Stop Displaying** is chosen.

NOTE: Only one patient record can be displayed at a time.

For more information about uploading patient records for selection from the Run screen, see the *Patient Records* section of *Using Muse*.

Adding a Scenario to a Running SCE

SCEs incorporate scenarios that contain pre-programmed physiology and events. Scenarios can be added to SCEs to enhance patient physiology.

To add a scenario to an SCE that is running:

1. Click the **Add Scenario** button on the Run screen

The Add Scenario Button

The Choose Scenario dialog box appears.

The **Add** button

The **Search** field

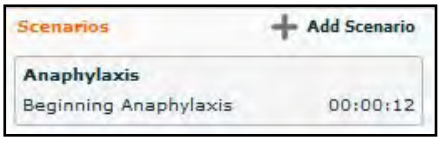
The Choose Scenario Dialog Box

2. Select a scenario from the Choose Scenario Dialog Box.

   The **Search** field can be used to search for a scenario to select.

3. Click **Add**.

   The scenario is added to the SCE and appears under the **Scenarios** heading on the Run screen.



An Added Scenario

Changing Physiology and Controlling Delivery

The patient physiology can be adjusted while an SCE is running in two ways: by using one of the physiological views on the Run screen to modify parameters or by using the Conditions, Interventions and Medications palettes.

Delivery can also be controlled from the Run screen using the Fetal and Labor physiological view parameters, and labor can be paused using the **Pause Labor** button.

Using the Physiological Views

From the Run screen, users can select from six different views representative of various body systems and features:

Neurological

Respiratory

Cardiovascular

Fetal and Labor

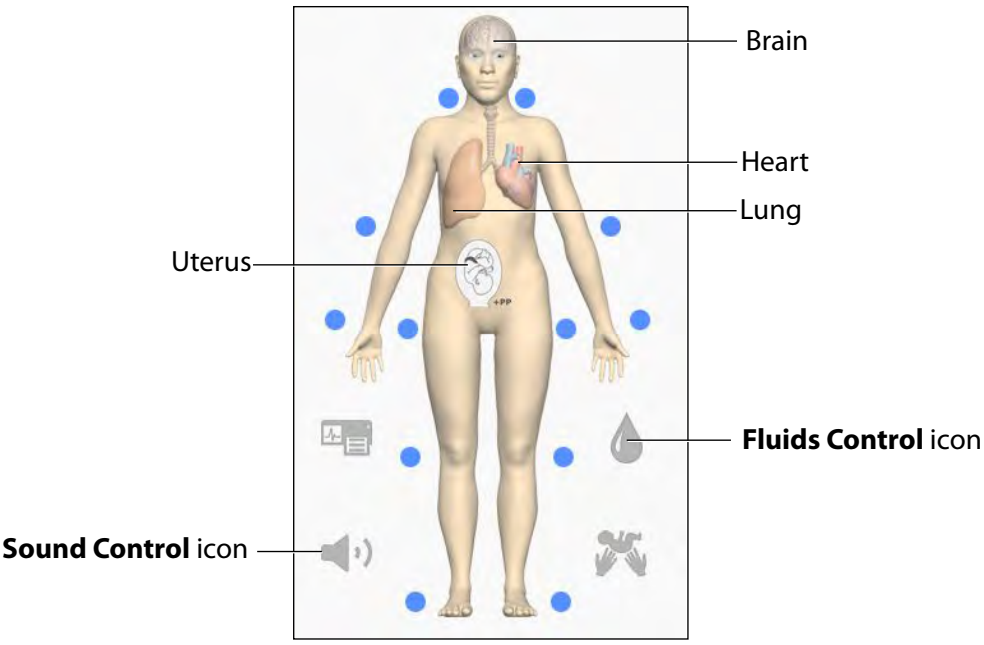
Fluids and Bleeding

Sounds

To access each view, click the appropriate organ, icon or button.

- For Neurological, click the brain.
- For Respiratory, click the lung .
- For Cardiovascular, click the heart.
- For Fetal and Labor, click the uterus.
- For Fluids and Bleeding, click the **Fluids Control** icon.
- For Sounds, click the **Sound Control** icon.

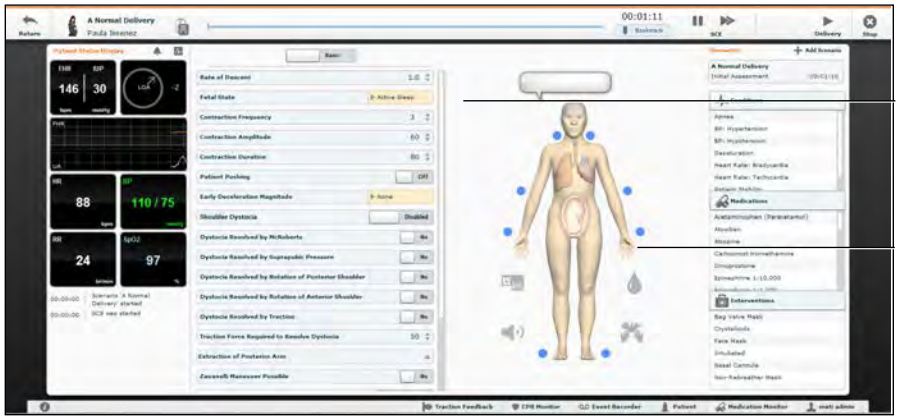
From each view, various parameters can be viewed and adjusted.



The Physiological Views

To change a patient's physiology using the physiological views:

1. Click the appropriate organ, icon or button from the homunculus to select the desired physiological view.



The Run Screen

The associated parameters appear to the left of the homunculus.

2. Locate the desired parameter.

   NOTE: Some views include a **Basic/Additional** switch that can be used to toggle between basic and advanced parameters. Basic parameters are always shown by default.

3. Select the parameter and set the new value.

   Parameters have varying controls, such as sliders, switches and menus. In the image below, the Heart Rate parameter is shown. Within the Heart Rate parameter, there are switches that toggle between **Modeled** and **Override**

and **Seconds** and **Minutes**, a slider that sets the beats per minute and an available field where the beats per minute value can be keyed in.

The Heart Rate Parameter

Once the parameter has been set, it is reflected in the patient's physiology.

Types of Parameters

There are two types of parameters: numeric and discrete.

Once a parameter is selected and set, the patient's physiology changes according to the model for that parameter.

Numeric Parameters

Numeric parameters set either a measured value (e.g., 20 mL), a multiplied value called a factor (e.g., Heart Rate Factor 2.0 is two times the baseline Heart Rate) or a coefficient that affects a physiological value in a non-linear way (e.g., FHR Variability Coefficient).

Numeric parameters are changed by clicking in the relevant field and entering a new value in place of the existing one or using a slider to move through the range of parameter values until the desired numeric value is established.

Once a measured value is set, that value overrides the physiologically modeled parameter value. To return to a physiologically modeled value, switch the slider in the parameter dialog from **Override** to **Modeled**.

Discrete Parameters

Discrete parameters enable users to select one of two or more options.

Discrete parameters are changed by choosing the appropriate option using a drop-down menu or toggle switch.

In the image below, the **Patient Pushing** parameter is shown. The **Patient Pushing** parameter is set using a discrete parameter switch that toggles between **Off** and **On**.

The Patient Pushing Parameter

Once the parameter has been set, it is reflected in the patient's physiology.

Some parameters, such as **Reactive Pupils**, have two toggle switches, one for the left side of the mannequin and one for the right.

The Reactive Pupils Parameter

When the **Apply to Both Eyes** parameter is set to **On**, any change made to the left or right side is also automatically applied to the other side.

The Apply to Both Eyes Parameter

NOTE: Not all changes to parameters affect the patient's physiology, but all are logged.

Using the Conditions, Medications and Interventions Palettes

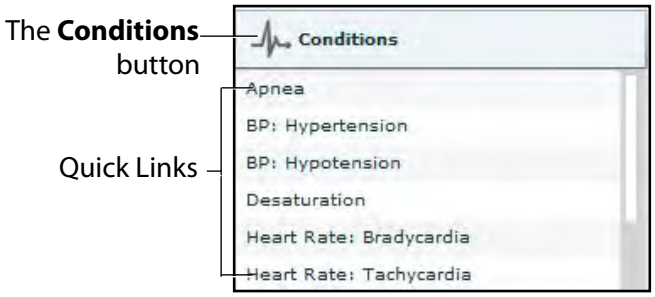
The Conditions, Medications and Interventions palettes on the Run screen enable the application of conditions, medications and interventions during simulation. Once applied, conditions are reflected in the patient's physiology and logged. All medications and interventions are also logged, and most affect the patient's physiology.

Using the Conditions Palette

Conditions are preprogrammed pathophysiological states that use one or more physiological parameters and are designed to enable you to create physiological changes on the fly.

There are two ways to apply conditions using the Conditions palette: using a Quick Link or using the complete Conditions menu. Quick Links are preconfigured conditions that are made accessible in the Conditions palette for quick application. Quick Links can also be created for the **Medications** and **Interventions** palettes.

To set parameters using the Quick Links in the **Conditions** palette, click one of the Quick Links. The condition is applied and affects the patient's physiology.



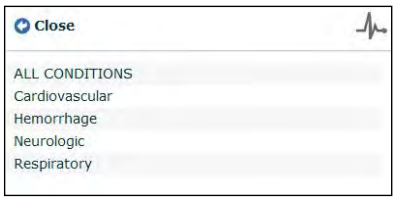
The Conditions Palette

NOTE: Quick Links can only be added while creating or editing an SCE.

Or, to apply a condition that is not set up as a Quick Link in the **Conditions** palette:

1. Click the **Conditions** button.

   The Conditions menu appears. Conditions are organized by system, or all available conditions are listed under **ALL CONDITIONS**.



The Conditions Menu

2. Navigate the menus to find the desired condition.

   Once the desired condition has been located, click the condition's name from the list.

   The condition is applied and affects the patient's physiology.

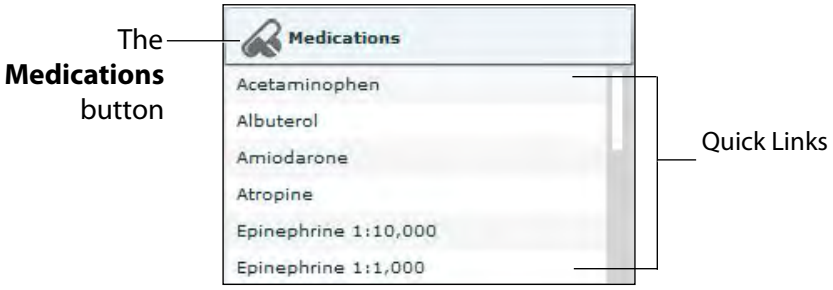
Using the Medications Palette

There are two ways to administer medications using the **Medications** palette: using a Quick Link or using the **Medications** menu. Quick Links are preconfigured medications that are made accessible in

the **Medications** palette for quick application. Quick Links can also be created for the **Conditions** and **Interventions** palettes.

To set parameters using the Quick Links in the **Medications** palette, click a Quick Link. The medication is applied and appears in the patient's physiology.

NOTE: Not all medications affect the patient's physiology, but all are logged.



The Medications Palette

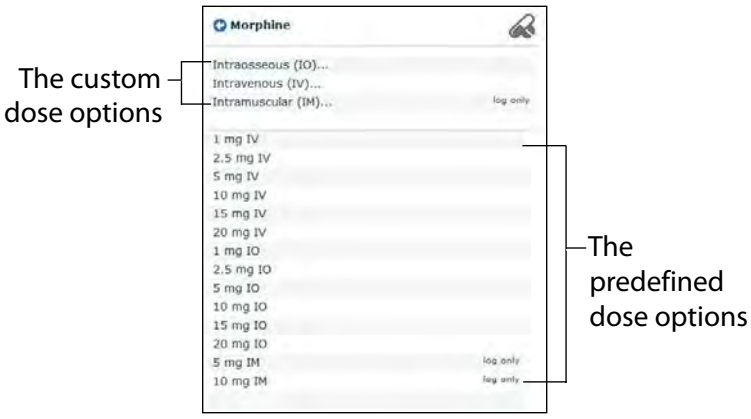
NOTE: Quick Links can only be added while creating or editing an SCE.

Or, to apply a medication that is not set up as a Quick Link in the **Medications** palette:

1. Click the **Medications** button. Medications are organized by type, and all available medications are listed under **ALL MEDICATIONS**.
2. Navigate through the menus to locate the desired medication.
3. Once the medication has been located, click the medication's name from the list.

The All Medications Menu

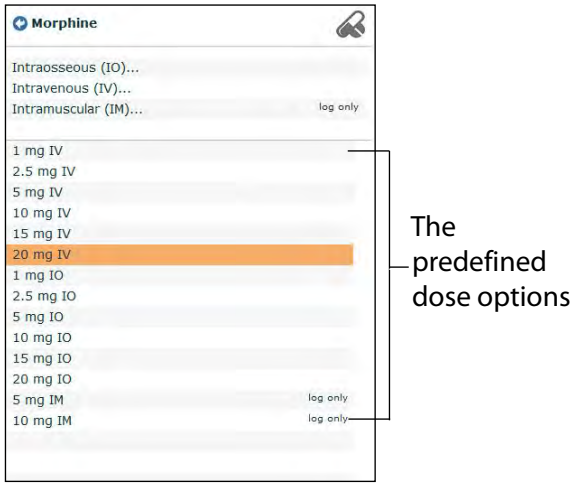
The Medication Dose menu appears, displaying the pre-defined dose and custom dose routes for the chosen medication.



The Medication Dose Menu

4. Select a dose option. This can be done one of two ways:

    a. Choose a pre-defined dose.

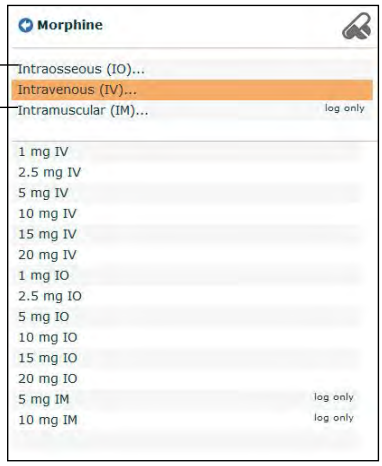


The Medication Dose Menu

The dose is applied and appears in the patient's physiology. The medication selected also appears in the Medication Monitor.

OR,

b. Choose a route of administration to administer a custom dose.



The Medication Dose Menu

The Custom Dose Administration menu appears.

The Custom Dose Administration Menu

5. Enter the desired dose and click the **Administer** button.

   The dose is applied and appears in the patient's physiology. The medication selected also appears in the Medication Monitor.

   NOTE: Not all medications affect the patient's physiology, but all are logged.

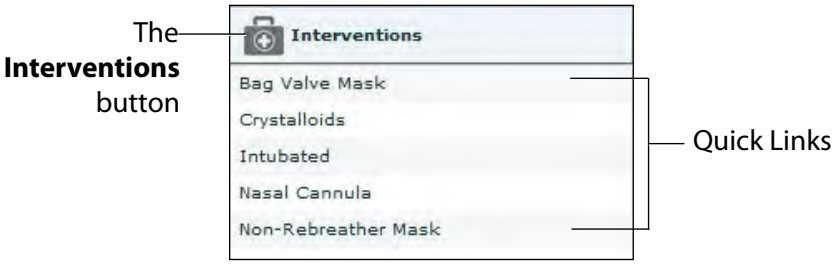
Using the Interventions Palette

There are two ways to perform and/or administer interventions using the Interventions palette: using a Quick Link or using the complete **Interventions** menu. Quick Links are preconfigured interventions

that are made accessible in the **Interventions** palette for quick application. Quick Links can also be created for the **Conditions** and **Medications** palettes.

To apply an intervention using the Quick Links in the **Intervention** palette, click an Intervention Quick Link.

NOTE: Not all interventions affect the patient's physiology, but all are logged.



The Interventions Palette

Once an Intervention is selected, a menu appears with available options for the selected Intervention. Click the desired option to select it. The intervention is applied and appears in the patient's physiology.

The Selected Intervention Options

NOTE: Quick Links can only be added while creating or editing the SCE.

Or, to apply an intervention that is not set up as a Quick Link in the **Interventions** palette:

1. Click the **Interventions** button.

The Interventions menu appears.

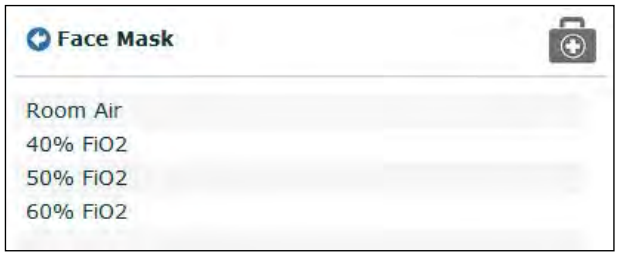
The Interventions Menu

The Interventions Menu

Interventions are organized by type, or all available interventions are listed under **ALL INTERVENTIONS**.

2. Navigate through the menus to find the desired intervention.
3. Once the desired intervention has been located, click the intervention's name from the list.

   The Intervention Options menu appears, showing the available options for the selected intervention.



The Intervention Options Menu

4. Click the desired option.

   The intervention is applied and appears in the patient's physiology.

Transitioning Scenario States from the Run Screen

To move between scenario states from the Run screen:

1. Click the desired scenario.

A Scenario

The Scenario Management pop-up menu appears, and all available states are listed.

The Scenario Management Pop-Up Menu

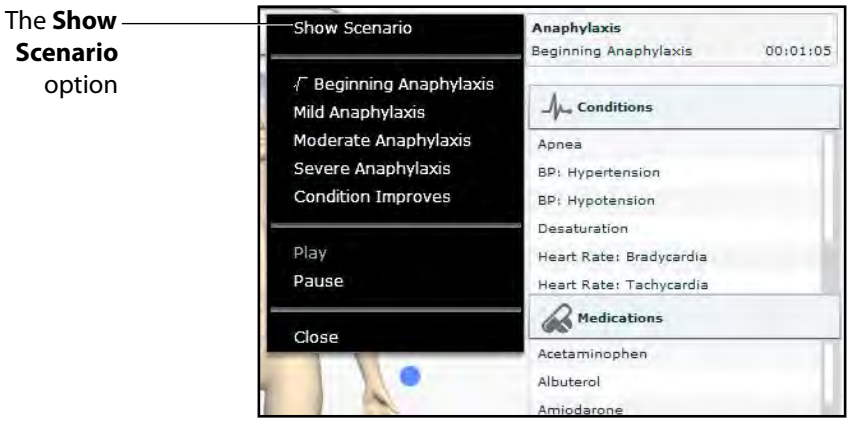
2. Select the desired state. The scenario proceeds to the selected state.

   The scenario can also be paused or continued by selecting the **Pause** and **Play** options from the Scenario Management Pop-Up menu.

Transitioning Scenario States from the Scenario Screen

To move between scenario states from the Scenario Screen:

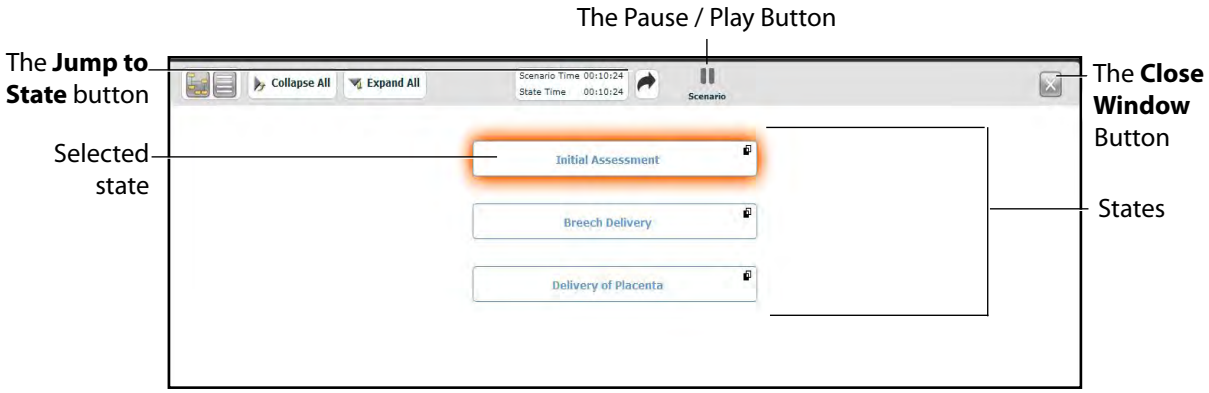
1. From the Run screen, click the desired loaded scenario. The Scenario Management pop-up menu appears.



The Scenario Management Pop-Up Menu

2. From the menu, select **Show Scenario**.

   The Scenario screen appears, displaying the scenario.

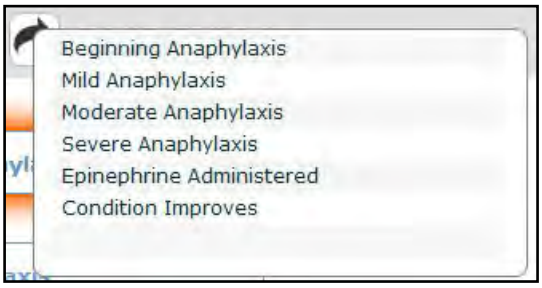


The Scenario Screen

At the top of this screen, the Scenario Time and State Time are visible. Additionally, users can pause and continue playing the scenario by clicking the Scenario **Pause** and **Play** button on the top of the screen.

3. Click the **Jump to State** button.

The Jump to State menu appears, displaying the available states.



The Jump to State Menu

4. Select the desired state.

   The scenario transitions to the selected state and the state is highlighted on the Scenario screen.

   NOTE: Double-click on the states to expand to the full view.

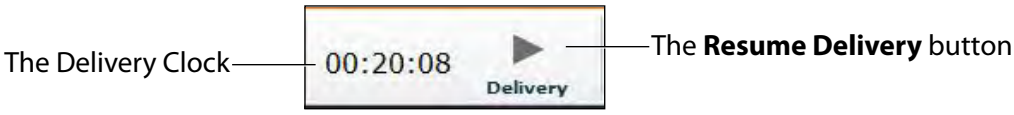
5. Click the **Close Window** button to return to the Run screen.

Pausing Labor

When a vaginal delivery SCE begins running, labor may start automatically or may be paused initially, depending on the selection made in the Patient Baseline when the SCE was created.

NOTE: The default setting is that labor will be paused when SCE begins running.

If labor is paused when the SCE begins, labor can be started at any time by clicking the **Resume Delivery** button in the upper right corner of the Müse screen.



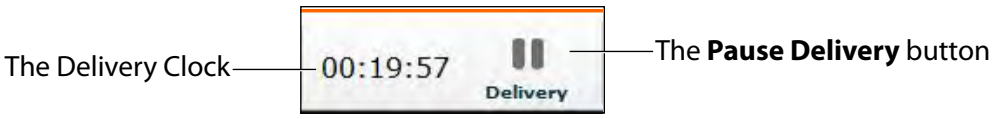
The Delivery Controls

When a vaginal delivery labor is in progress, the delivery clock counts down to delivery.

NOTE: The delivery time is an estimate based on the current position on the descent mechanism and the constant selected rate of descent; the delivery time does not take into account the contractions. Therefore, the clock will always reach 0 before the fetus is delivered. The higher the descent rate, the more difference there will be between the clock reaching 0 and the actual delivery. The time left on the delivery clock is driven by the patient's physiology and may change if certain parameters, such as **Contraction Frequency** and **Rate of Descent**, are modified.

Once the fetus is in position for delivery and can be retrieved from the maternal mannequin, the event is logged as "fetus released from the birthing mechanism".

When labor is in progress, the **Resume Delivery** button becomes a **Pause Delivery** button. To pause labor, click the **Pause Delivery** button.



The Delivery Controls

The delivery clock stops and the fetal mannequin stops descending inside the mother. However, SCE time and physiology DO NOT stop.

When labor is paused, labor can be resumed by clicking the **Resume Delivery** button.

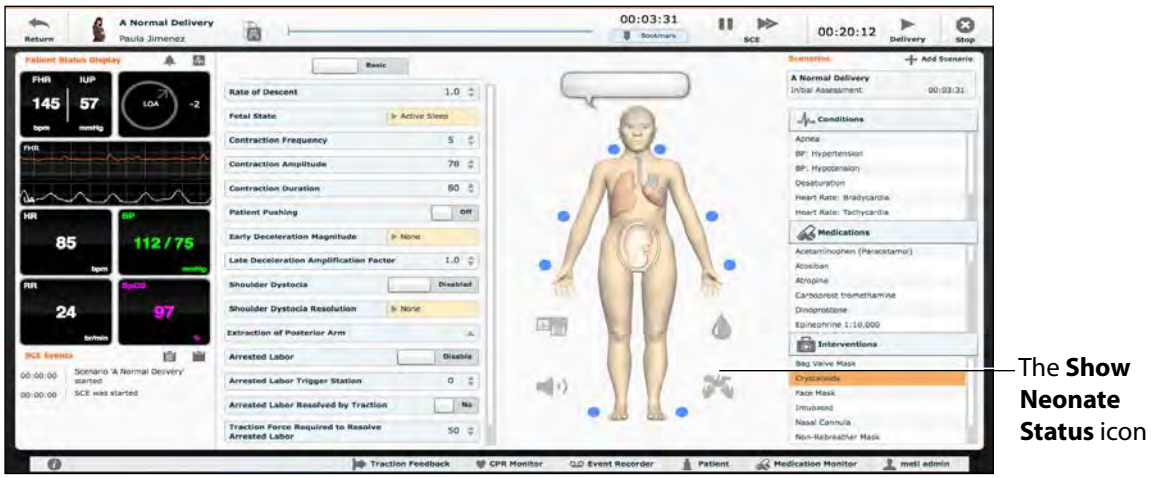
Marking the Baby Delivered

When the baby is delivered vaginally during simulation, the instructor or facilitator must log this event in Müse.

To mark the baby delivered:

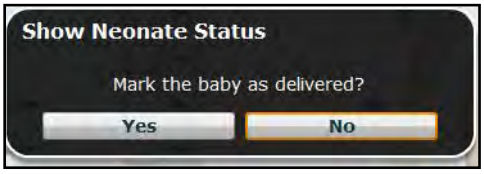
1. From the Run screen, click the **Show Neonate Status** icon.

   NOTE: The **Show Neonate Status** icon is only available after the labor clock has counted down to zero and the fetus has reached the end of its descent inside the maternal mannequin. The icon changes from gray to yellow at this time.



The Run Screen

The **Show Neonate Status** window appears, asking if you want to mark the baby as delivered.

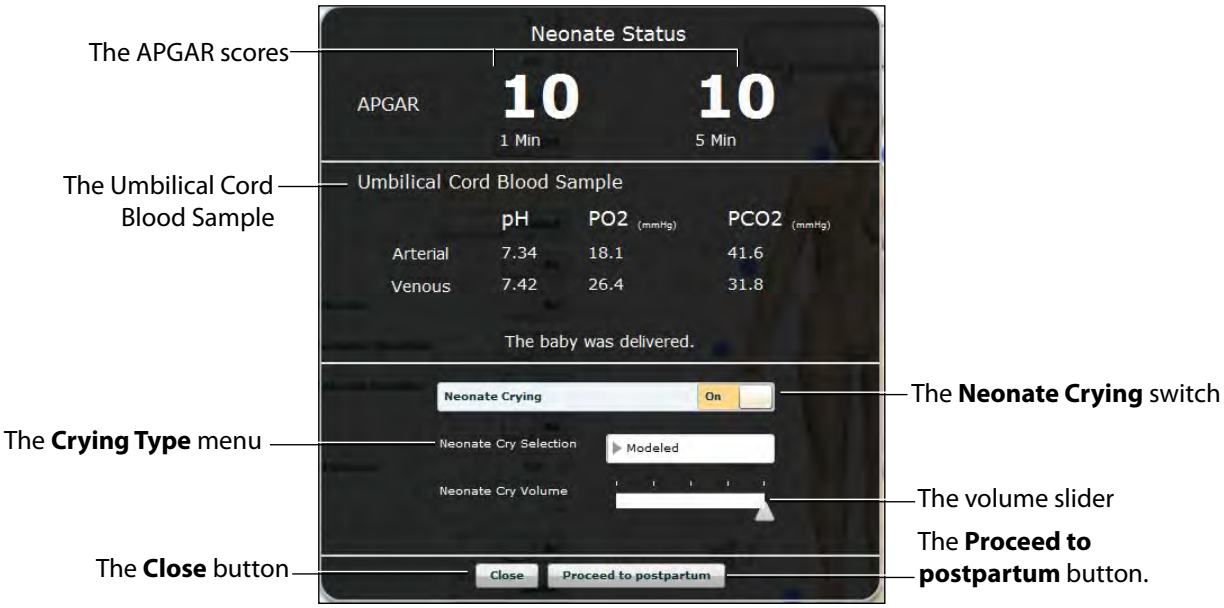


The Show Neonate Status Window

IMPORTANT: Marking the baby delivered is irreversible. **DO NOT** mark the baby as delivered until the baby has been removed from the maternal mannequin.

2. Click **Yes**.

   The **Neonate Status** window appears, displaying the baby's APGAR at one minute and five minutes and the umbilical cord blood sample for pH, PO_2, and PCO_2. The APGAR scores and blood sampling are generated automatically based on maternal physiology and events leading up to delivery.



The Neonate Status Window

From this window, users can also toggle **Neonate Crying** on or off. The **Neonate Cry Selection** drop-down menu can be used to select the type of crying and the volume slider can be used to increase or decrease the volume.

3. Select the desired crying settings.

The default crying type is **Modeled**, with crying sounds based on APGAR scores.

4. Click **Close** to close the window without transitioning the mother to postpartum or, to close the window and transition the mother to postpartum, click **Proceed to postpartum**. This event will be logged.

   NOTE: The **Proceed to postpartum** option will only appear in the Neonate Status Window if "Including Postpartum" was selected on the Patient Baseline screen.

   The window closes and the delivery is logged in Müse.

   Neonate crying settings can be modified at any time after delivery by clicking the **Show Neonate Status** icon again or clicking the **Sounds Controls**.

In SCEs where the baby is delivered by C-section, Müse automatically detects delivery. However, the **Show Neonate Status** icon is enabled throughout the simulation and can be used to display APGAR score and control neonatal crying.

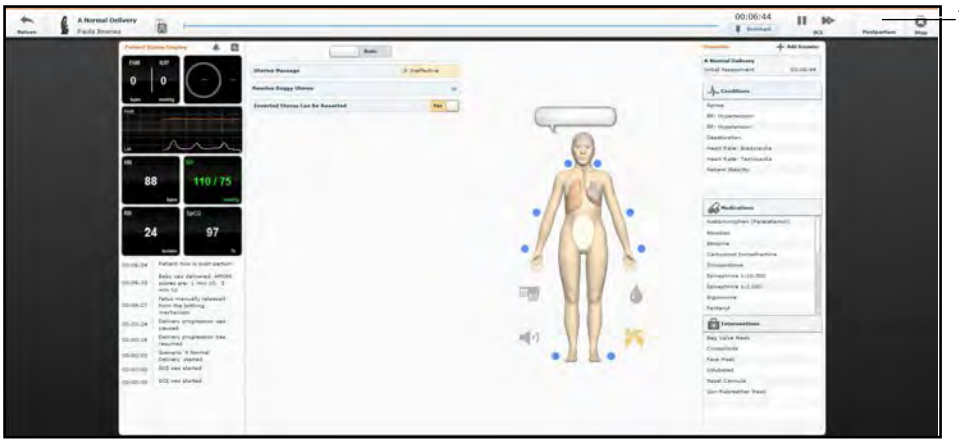
IMPORTANT: The placenta should only be delivered AFTER the baby is marked as delivered.

Transitioning the Mother to Postpartum

NOTE: The **Proceed to postpartum** option will only appear in the Neonate Status Window if **Including Postpartum** option was selected on the Patient Baseline screen.

If additional assessments and interventions are to be performed after the baby has been delivered and the delivery has been logged in Müse, the patient and mannequin must be transitioned to the postpartum phase.

1. From the Neonate Status Window, click **Proceed to postpartum**.
2. Once the baby has been marked as delivered, the **Delivery** icon is replaced by the **Postpartum** indicator.

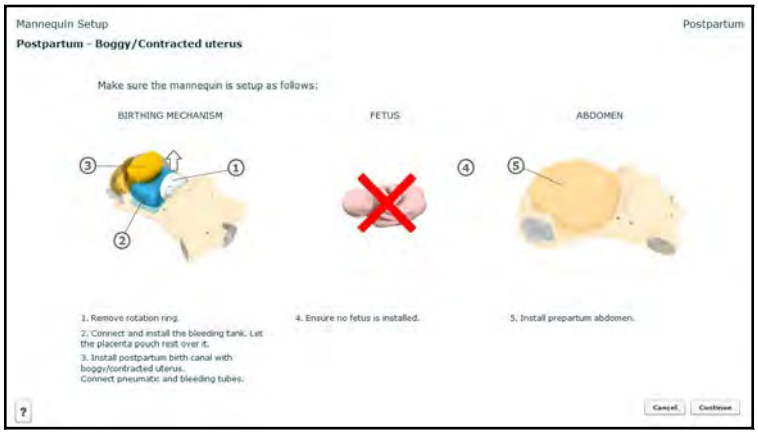


The **Postpartum** indicator

The Run Screen

3. Click **Postpartum** for instructions on how to configure the mannequin for the postpartum phase.

   The Mannequin Setup window appears.


Mannequin Setup
Postpartum
Postpartum - Boggy/Contracted uterus
Make sure the mannequin is setup as follows:
BIRTHING MECHANISM
FETUS
ABDOMEN
1. Remove rotation ring.
2. Connect and install the bleeding tank. Let the placenta pouch rest over it.
3. Install postpartum birth canal with boggy/contracted uterus. Connect pneumatic and bleeding tubes.
4. Ensure no fetus is installed.
5. Install prepartum abdomen.
?

The Mannequin Setup Window

4. Perform the mannequin configuration as outlined in the Mannequin Setup window.

   For detailed information on each step in the Mannequin Setup window, see the *Configuring the Mannequin* section of this user guide.

   IMPORTANT: You MUST set up the mannequin as directed in the Mannequin Setup window before proceeding to the next step. Failure to do so may result in damage to the mannequin and undesired behavior during simulation.

5. Click **Continue**.

The Mannequin Setup window closes and the **Postpartum** icon appears above the indicator.

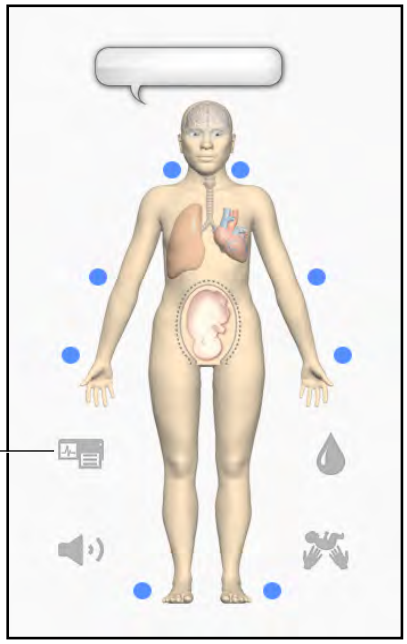
The Run Screen

The patient is logged as postpartum in Müse and the postpartum phase begins.

Selecting CTG Monitor Options

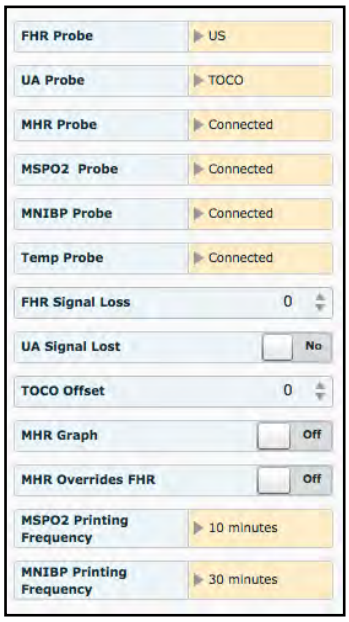
CTG monitor options, such as which probes are attached, loss of signals and noise offset can be selected using the CTG monitor parameters.

To access the CTG monitor parameters, from the Run Screen, click the **CTG Configuration** icon next to the homunculus.



The Homunculus

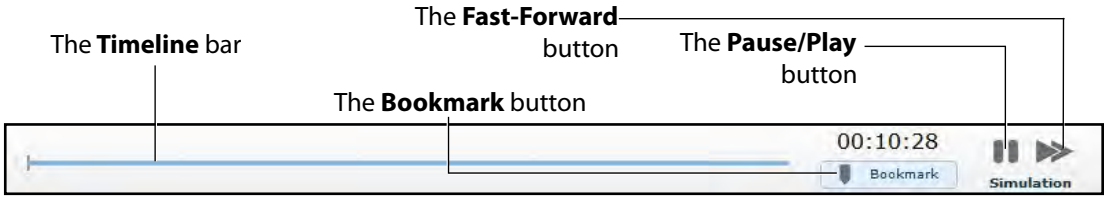
The CTG monitor parameters appear.



The CTG Monitor Parameters

SCE Time Controls

The SCE time controls are located at the top of the Run screen.



The SCE Time Controls

The **Timeline** bar shows the amount of time that has elapsed and bookmarks that have been created.

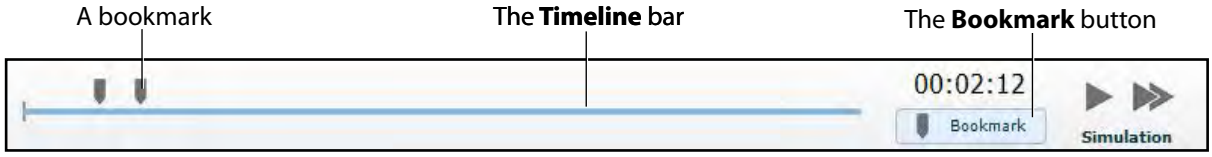
The **Bookmark** button creates a bookmark at the current point in the SCE. The bookmark can be used later to reset the patient's physiology to what it was when the bookmark was created.

Clicking the **Fast-Forward** button once accelerates the SCE time at a 4:1 ratio. Clicking the **Fast-Forward** button a second time accelerates the SCE time at an 8:1 ratio.

The **Pause/Play** button pauses the SCE time or starts the SCE if it has been paused. The **Pause/Play** button also returns the SCE time to normal speed after **Fast-Forward** has been selected.

Using Bookmarks

To create a bookmark, click the **Bookmark** button. A bookmark appears on the **Timeline** bar.

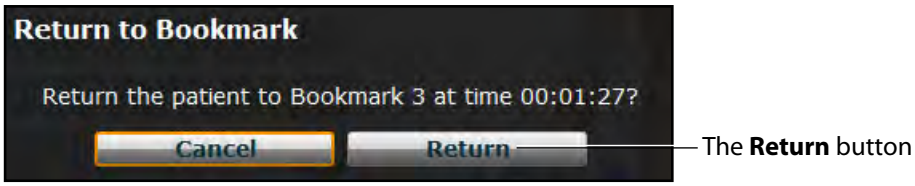


The SCE Time Controls

To return to a bookmarked time in the SCE:

1. Click the bookmark on the timeline.

   The Return to Bookmark message appears.



The Return to Bookmark Message

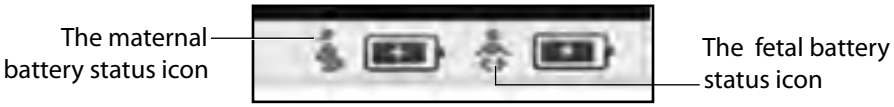
2. Click **Return**.

   The patient's physiology returns to the selected point in the timeline.

   NOTE: The SCE time continues moving forward and does not reset to the bookmarked time.

The Battery Status Icon

To view the battery charge status of the maternal or fetal mannequin, click the respective battery status icon in the lower left corner of Müse.

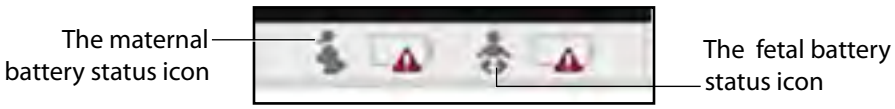


The Battery Status Icons - Fully Charged

When the battery charge on either mannequin reaches 30 percent or less, the battery status icon turns red.

The Battery Status Icons - Low Battery

When the battery charge on either mannequin reaches 10 percent or less, the battery status icon displays a red caution symbol.



The Battery Status Icons - Low Battery

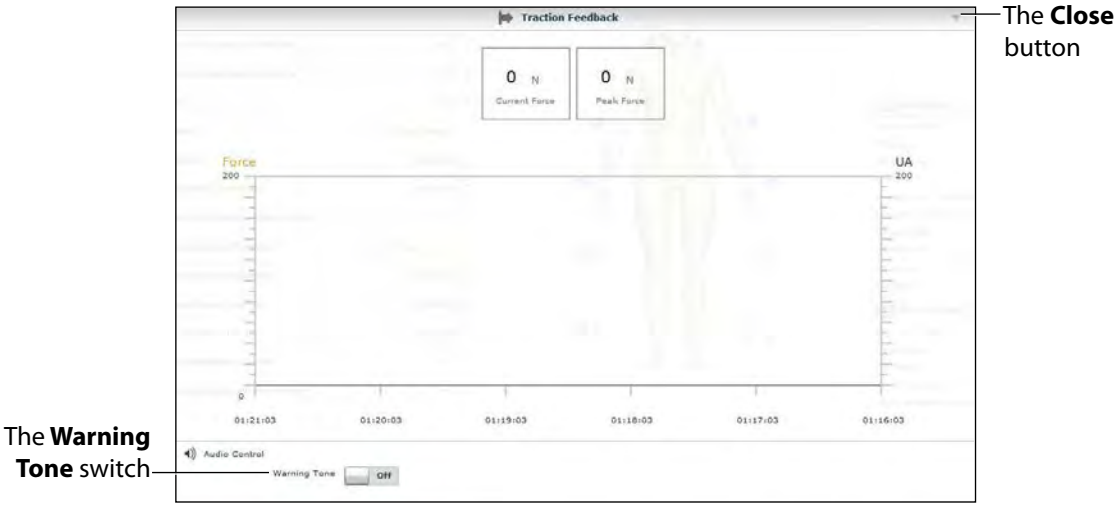
Traction Feedback

Traction Feedback is accessible from the Run screen and can be used to monitor traction force applied to the fetus's neck and head.

To view Traction Feedback and toggle the traction warning tone on or off, click the **Traction Feedback** button at the bottom of the Run screen.

The Traction Feedback Button

The Traction Feedback window appears.



The Traction Feedback Window

The Traction Feedback window displays current force, peak force and force over time.

To activate a two-level warning tone when traction force nears or exceeds the acceptable range specified in the Müse System Settings, turn the **Warning Tone** toggle switch **On**. When the **Warning Tone** is **On**, an intermittent beep sounds when traction reaches or exceeds 90 percent of the maximum acceptable force. When traction reaches or exceeds the maximum acceptable force, the warning tone changes to a continuous beep.

To close the Traction Feedback window, click the **Close** button.

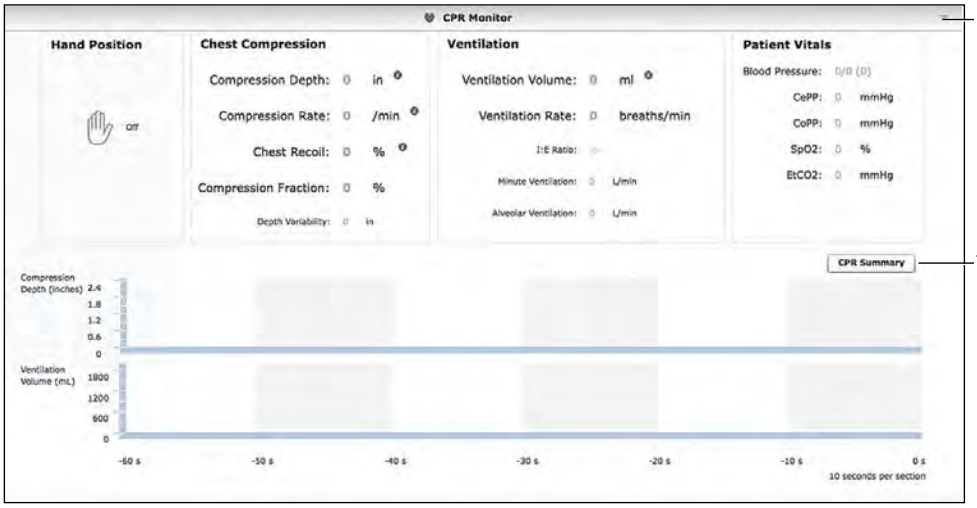
The CPR Monitor

The CPR monitor, available from the Run screen, is used to monitor the efficacy of CPR interventions.

To use the CPR monitor, click the **CPR Monitor** button at the bottom of the Run screen.

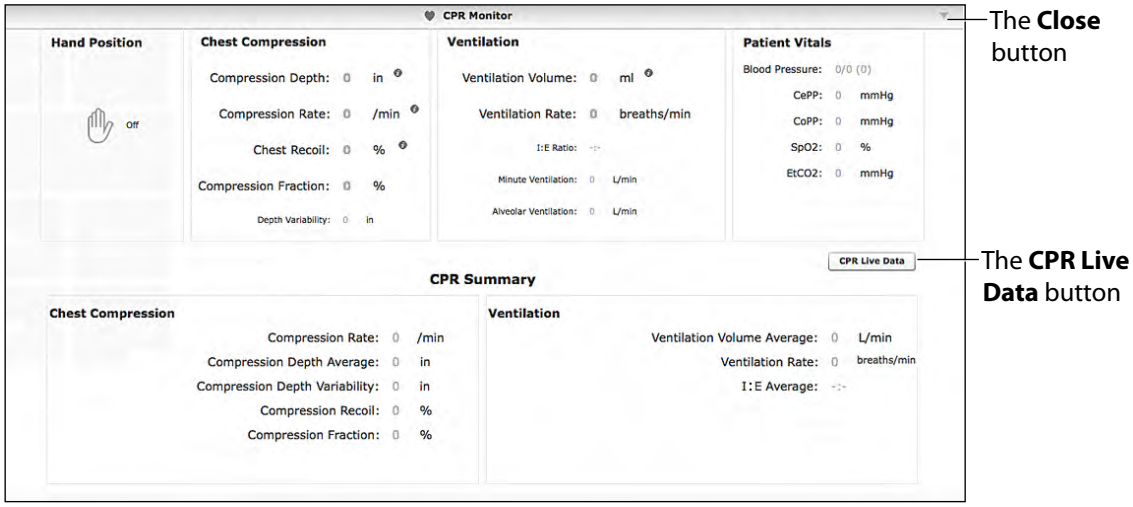
The CPR Monitor Button

The CPR Monitor appears displaying the live data view.



The CPR Monitor - Live Data View

Click the **CPR Summary** button to display the summary view.



The CPR Monitor - Summary View

Click the **CPR Live Data** button to return to the live data view.

The CPR Monitor displays several statistics, including current hand position, compression and ventilation rates, compression depth, ventilation volume, and compression-ventilation ratio.

CPR data is recorded in the Event Logs.

To close the CPR Monitor, click the **Close** button.

Using the Event Recorder to Save States

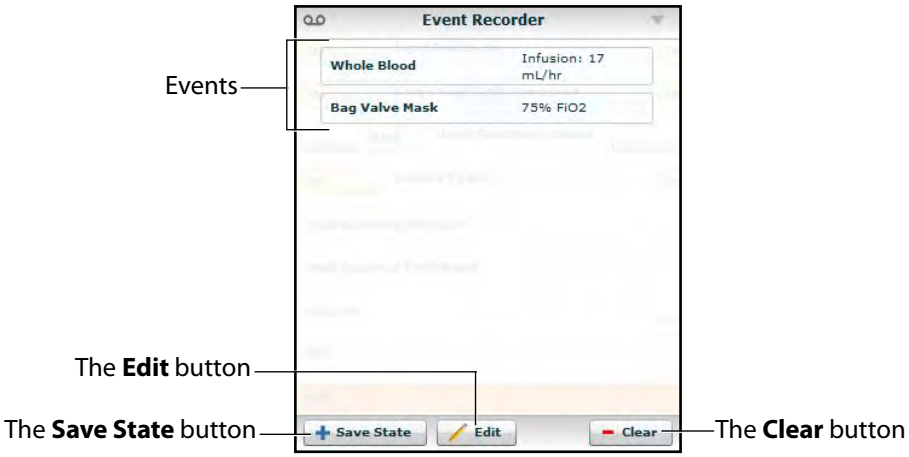
The Event Recorder can be used to save conditions, interventions and parameter changes as states.

To save a state using the Event Recorder:

1. Apply the desired conditions, interventions and parameters.
2. Click the **Event Recorder** button at the bottom of the Müse screen.

The Event Recorder Button

The Event Recorder appears, displaying all events that have occurred since the start of the SCE.



The Event Recorder

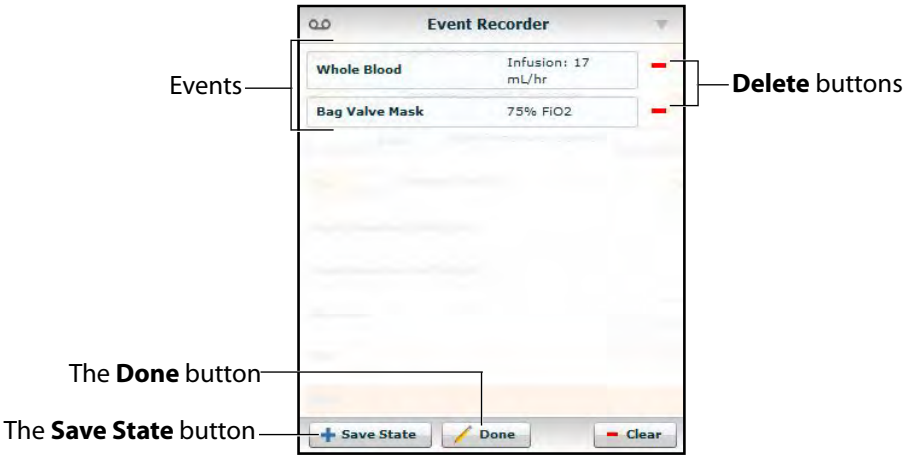
WARNING: The **Clear** button deletes all recorded events. This action cannot be undone.

3. Review the list of events.

   If you wish to remove any events from the state to be saved:

   a. Click **Edit**.

      A **Delete** button appears next to each recorded event.



The Event Recorder

   b. Click the **Delete** button next to each event to be removed.

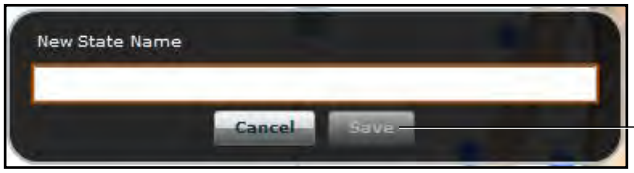
      The events are removed from the Event Recorder.

   c. Click **Done**.

The **Delete** buttons are hidden.

4. Click **Save State**.

   The New State Name window appears.



The New State Name Window

5. Enter a state name.
6. Click **Save**.

The state is saved to the State Library and can be accessed via the Scenario Designer.

Creating a New Patient

When an additional patient with specific physiological characteristics is needed for repeated use, a new patient can be created from the Run screen.

To create a new Patient:

1. From the Home page, run an SCE that has a Patient with the same gender as the Patient to be created.
2. From the Run screen, apply the desired conditions and set the necessary parameters.
3. Once complete, click the **Patient** button at the bottom of the Run screen.

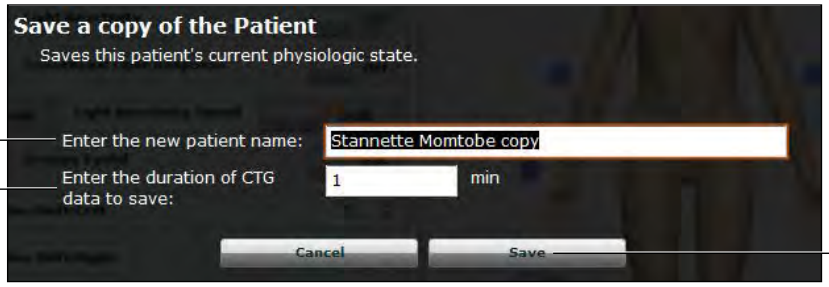
The Patient Button

The Patient pop-up menu appears.

The Patient Pop-Up Menu

4. Click **Save**.

The Save a copy of the Patient dialog box appears.

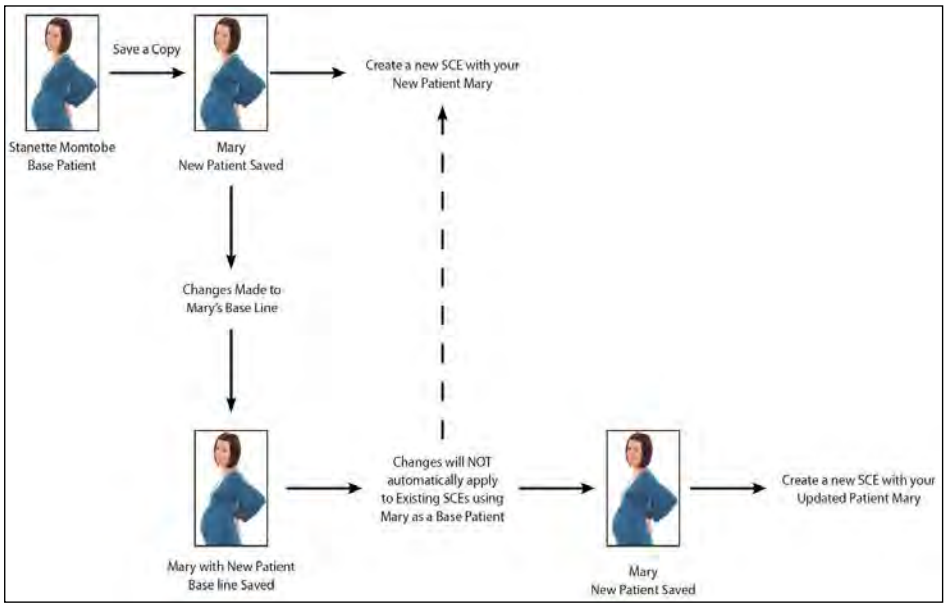

Save a copy of the Patient
Saves this patient's current physiologic state.
Enter the new patient name:
Stannette Momtobe copy
Enter the duration of CTG data to save:
1
min
Cancel
Save
The Enter the new patient name field
The Enter the duration of CTG data to save field
The Save button

The Save a Copy of the Patient Dialog Box

5. Enter a name for the new Patient in the **Enter the new patient name** field.
6. Enter the duration of CTG data to save in the **Enter the duration of CTG data to save** field. The duration entered represents the amount of time from the current time (e.g., entering 30 saves the most recent 30 minutes of CTG data).
7. Click **Save**.

   The new Patient is saved and available for selection from the Base Patients Library when creating a new SCE.

NOTE: If the newly created base patient is used in a new SCE (SCE patient), any changes made to the newly created base patient at a later date will not affect that SCE patient.



The New Patient Diagram

Resetting a Patient

Resetting a Patient brings the Patient back to its original physiological state before any scenarios were applied or modifications were made. Any running scenarios are paused. However, the SCE time is unaffected. Additionally, the reset appears in the Event Logs.

NOTE: If baseline physiology settings have been selected, they are removed when the Patient is reset.

To reset a Patient:

1. While running an SCE, click **Patient** at the bottom of the Run screen.

The Patient Button

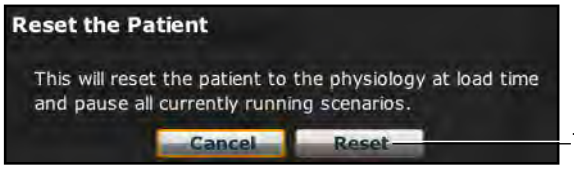
The Patient pop-up menu appears.

The **Reset** button

The Patient Pop-Up Menu

2. Click **Reset**.

The Reset the Patient dialog box appears, stating that the patient's physiology will be reset to its state at load time and all running scenarios will be paused.


Reset the Patient
This will reset the patient to the physiology at load time and pause all currently running scenarios.
Cancel
Reset

The **Reset** button

The Reset the Patient Dialog Box

3. Click **Reset**.

The patient returns to its original physiological state as at the start of the SCE. The patient reset is indicated with a red marker on the SCE timeline bar.

4. To resume any paused scenarios, click the loaded scenario on the left side of the screen.

The Scenario Management pop-up menu appears.

5. From the Scenario Management pop-up menu, select **Play**.

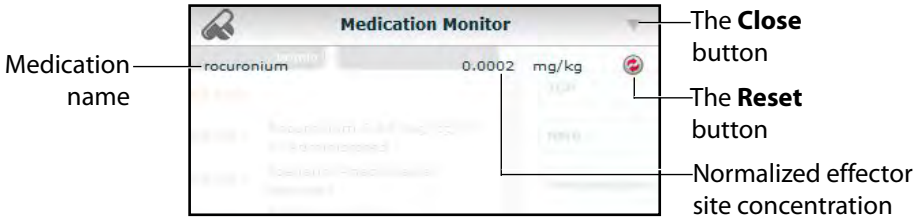
The scenario is resumed.

The Medication Monitor

The Medication Monitor tracks the infusion of medication administered for medications that affect patient physiology. To activate the Medication Monitor, from the Run screen, click the **Medication Monitor** button in the bottom, right portion of the screen.

The Medication Monitor Button

The Medication Monitor appears as a movable box on the Run screen.



The Medication Monitor

The normalized effector site concentration is shown next to each medication listing.

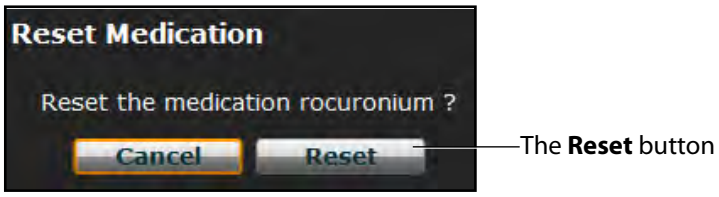
The **Reset** button is used to clear a medication from the physiological model and the Medication Monitor.

To close the Medication Monitor, press the **Close** button in the upper right corner of the medication Monitor window.

Resetting a Medication

To reset a medication from the Medication Monitor, click the **Reset** button on the Medication Monitor.

The Reset Medication dialog box appears, asking you to confirm that you wish to reset the medication.



The Reset Medication Dialog Box

The medication is cleared from the model and from the Medication Monitor.

With continuous infusions, the amount infused goes back to zero, but the infusion continues. To stop the infusion, you must select the medication from the medication library and set the infusion rate to zero.

Returning to the Home Page

To exit the SCE and return to the Home page, click the **Return** button in the upper-left of the run screen.

The Return Button

The SCE continues running and the Home page appears.

To return to the SCE from the Home page, click the **Continue** button in the SCE summary panel of the running SCE.

Abruptio Placentae Secondary to Cocaine Abuse
Alishia Stower
Print SCE
Add To Favorites
Age 23 years old
Weight 66.0 kg
Base Stannette Momtobe
Operating Mode Vaginal Delivery
Overview
The learners will admit to the Labor and Delivery Unit and then care for a 23-year-old, gravida 1, para 0 woman in apparent distress. She is accompanied by a disheveled man of similar age. The woman has a cocaine habit, which has led to an abruptio placentae at 34 weeks gestation. The learners will participate in three states: diagnosis, stabilization and treatment of the patient. The learners will admit the patient, perform a physical assessment, communicate findings to the healthcare provider, carry out the orders to stabilize the patient and her fetus, reassure the patient and her significant other and prepare the patient for emergency cesarean section. The preoperative form will be completed and a surgical consent form explained.
This Simulated Clinical Experience (SCE) consists of three states that are transitioned manually at the discretion of the facilitator. With manual transitions, the facilitator should advance to the applicable state when appropriate interventions are performed.
In State 1 Initial Assessment, the patient's HR is in the 100s, BP is in the 100s/60s, RR is in the mid 20s, SpO2 is in the low 90s on room air and temperature is 37C. Her cardiac rhythm is sinus with an audible S3. Breath sounds are clear and bowel sounds are normal. Her skin is pale, moist and cool. She is alert and oriented to person, place and time but is anxious, with pressured speech. She is crying. Her pupils are equal and reactive to light and accommodation. Her reflexes are normal. There is a bluish circle around her umbilicus, and her abdomen measures 32 cm. She complains of sharp continuous pain in her abdomen, and abdominal guarding is present on palpation. She rates her pain as a 5 out of 10. There are irregular, short uterine contractions with uterine irritability throughout and continuous vaginal bleeding. She is unclean and disheveled, wearing bloodstained pants and socks. There is a
Review
Stop
Continue
The Continue button

The SCE Summary Panel

Stopping the SCE

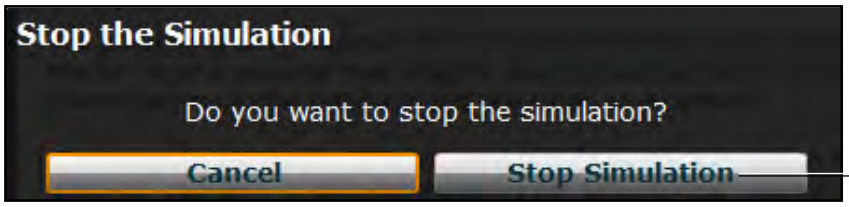
Running SCEs can be stopped from the Run screen or the Home page.

To stop an SCE from the Run screen:

1. Click **Stop** in the upper right corner of the screen.

The Stop Button

The Stop the Simulation dialog box appears.



The **Stop Simulation** button

The Stop The Simulation Dialog Box

2. Click **Stop Simulation**.

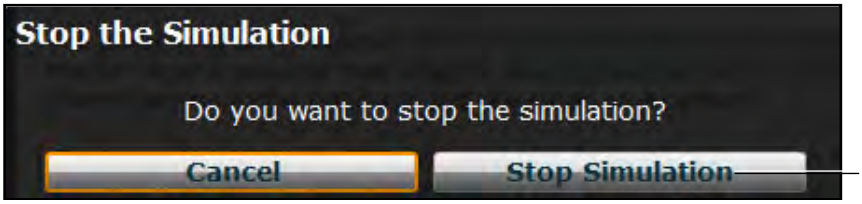
   The SCE stops running and the Müse Home page is shown.

To stop an SCE from the Home page:

1. Click the **Stop** button in the bottom left corner of the SCE Summary Panel.

The Stop Button

The Stop the Simulation dialog box appears.



The **Stop Simulation** button

The Stop The Simulation Dialog Box

2. Click **Stop Simulation**.

   The SCE stops running.

IMPORTANT: Always stop all running SCEs before logging out of Müse.

Developing SCEs

Creating and editing SCEs are similar processes. Once an SCE is created, the steps for modifying the SCE are the same as those for editing a previously-created SCE. The processes of creating and editing SCEs each begin with a unique button on the Home screen.

Use the **New SCE** button to create a new SCE.

The New SCE Button

The minimal requirements for creating a new SCE include selecting a Patient, naming the SCE and saving the SCE. Once the new SCE is created, you can continue with the SCE development or edit it later.

Use the **Review** button to edit an existing SCE.

The Review Button

Creating a New SCE

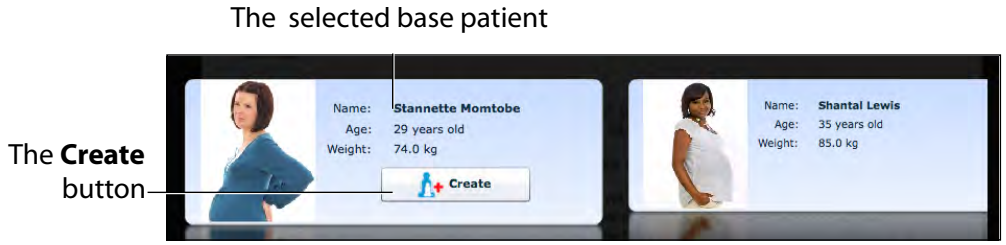
Creating an SCE requires naming the SCE and selecting a Base Patient.

To create a new SCE:

1. From the Home screen, click **New SCE**.

The New SCE Button

The Patients Palette appears.



The Patients Palette

2. Click on a patient to select that patient from the palette and click **Create**.

   The SCE Editor appears, showing the Enter a name for the SCE dialog box.

The SCE Editor

3. Enter the name for the SCE.

   NOTE: The name of the SCE may NOT exceed 80 characters. Additionally, SCE file names CANNOT contain any special characters, such as / \ : * ? < > % | “

4. Click **Save**.

   Once the SCE is saved, it is stored and can be edited and reviewed at any time, including creating a Patient Profile and content, determining settings and programming scenarios.

The SCE Editor

The SCE Editor can be used to review preconfigured SCEs and to create or edit custom SCEs.

To access the SCE Editor, click the **Review** button in the SCE Summary Panel or create a new SCE.

The SCE Editor

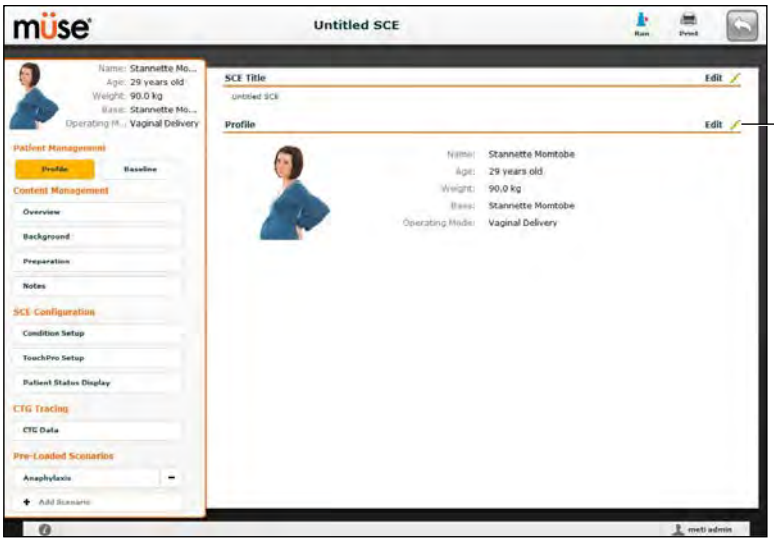
The buttons in the upper right corner of the SCE Editor provide options for running the SCE, generating a printable PDF, or returning to the Home page.

The **Content Management**, **SCE Configuration,** and **Preloaded Scenarios** links in the left-side panel and the CTG Data are used to review the SCE content and configuration, view CTG data, and view scenarios applied to the SCE.

Editing a Patient's Profile

To edit the Patient Profile:

1. From the SCE Editor, in the **Profile** section, click **Edit**.



The SCE Editor Screen

The Profile Editor appears.

The Profile Editor

2. Set the Patient's name, age, gender and weight by filling in the appropriate fields.
3. Click the **Change Picture** button to change the patient's picture (optional).
4. Click **Save**.

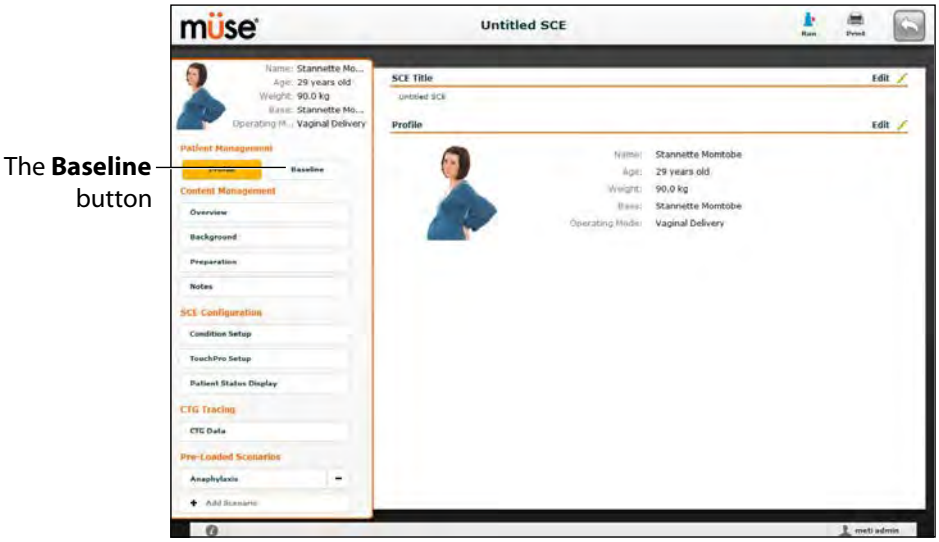
NOTE: The **Upload Picture** button, which is only available in the SCE Development version of the Müse software, can be used to add new photos to the library of patient pictures.

IMPORTANT: No part of the patient's profile can contain any special characters, such as / \ : * ? < > % | "

Setting a Patient's Baseline

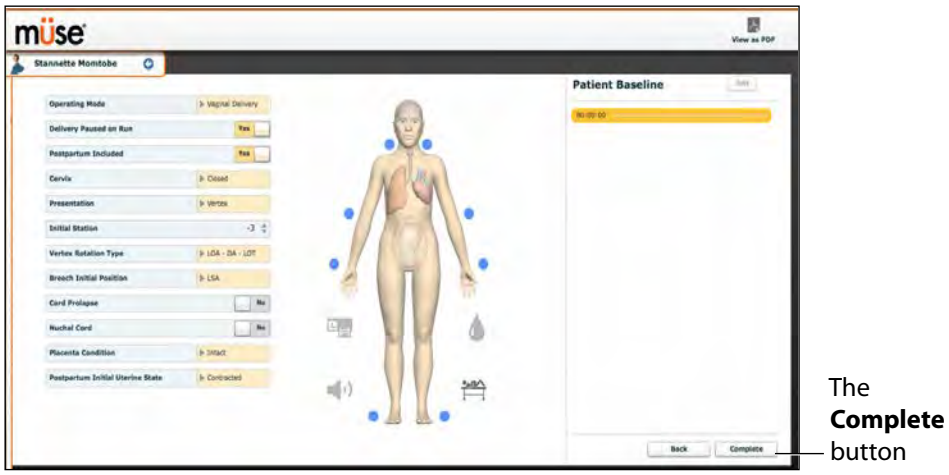
The patient baseline is the patient's initial physiology at the beginning of an SCE. To set the Patient's Baseline:

1. From the SCE Editor, click **Baseline**.



The SCE Editor Screen

The Patient Baseline screen appears.



The Patient Baseline Screen

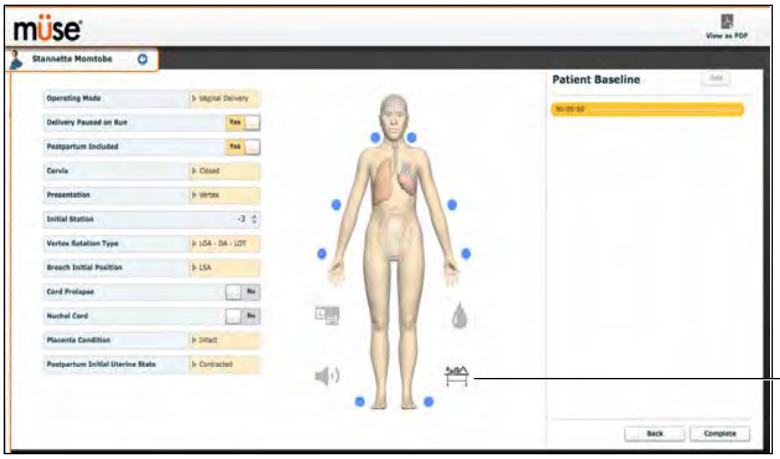
2. Set the Patient's baseline physiology by modifying the desired parameters.
3. Click **Complete**.

   When the SCE begins, the Patient physiology reflects the selected baseline settings.

Selecting Labor and Delivery Options

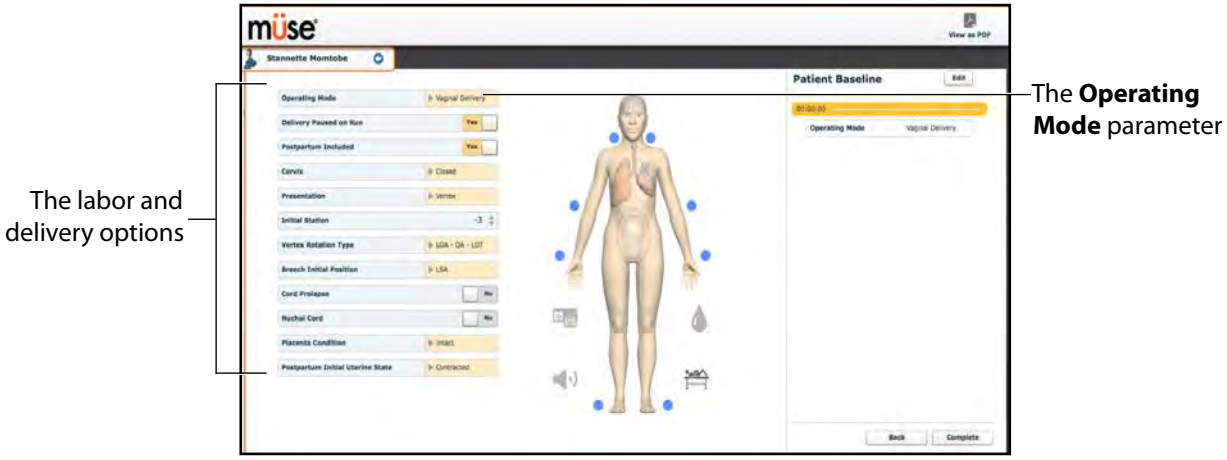
From the Patient Baseline screen, labor and delivery options such as delivery type, fetal station and fetal presentation can be selected.

To access labor and delivery options, from the Patient Baseline screen, click the **Childbirth Configuration** icon.



The Patient Baseline Screen

The labor and delivery options appear.



The Childbirth Configuration Options Screen

The **Operating Mode** parameter is used to set the SCE to include vaginal or Cesarean delivery, or to take place only in the prepartum or postpartum stage.

CTG Data

The patient's CTG data is displayed on the SCE Editor and can be reviewed using the **CTG Review** buttons in the lower left corner of the CTG strip.

The SCE Editor

The CTG data represents the fetal heart rate and uterine activity measured by electrical monitors prior to the start of the SCE. This data can be reviewed on the CTG monitor while the SCE is running.

CTG data can be added to a custom SCE in one of two ways:

1. By selecting an existing SCE with the desired CTG data to create a new SCE:
    a. Select SCE with desired CTG data.
    b. Run the SCE for two minutes.
    c. From the Patient menu, click **Save**.

        The Save a copy of the Patient window appears.

    d. Enter a new patient name and select the duration of CTG data to be included.

        NOTE: The maximum duration is dependent on the length of the CTG data from the original SCE.

    e. Click **Save**.
    f. Stop the SCE.

        The Home screen appears.

    g. From the SCE Selection panel, select **New SCE**.
    h. Locate the recently created new patient and click **Create**.

        The SCE Overview screen appears with the desired CTG data.

    OR

2. By creating CTG data and applying it to a new SCE. To use this method:

a. Create a new SCE.

   This SCE will be used only to generate CTG data.

b. Apply the desired settings (e.g., physiology) to the SCE.

c. Run the SCE for as long as CTG data is desired. The fast-forward buttons can be used to accelerate the SCE and the CTG data capture.

   NOTE: Up to 12 hours of patient data can be stored on the CTG data per SCE.

d. From the Patient menu, click **Save**.

   The Save Patient window appears.

e. Click **Overwrite**.

f. Enter the duration of CTG data to be included.

g. Click **Save**.

h. Stop the SCE.

   The SCE now includes the CTG data collected while running the SCE and this CTG data will be present when running the SCE.

Content Management

SCE Content is entered from the SCE Editor using the **Overview**, **Background**, **Preparation** and **Notes** buttons under the **Content Management** heading.

The Content Management Buttons

Each button accesses a screen that allows users to enter information for the chosen section (Overview, Background, Preparation or Notes). Click the **Edit** button of each section on the SCE Editor to access a rich-text editor that enables data entry.

IMPORTANT: Text can be copied and pasted into the fields from TextEdit or Notepad only.

The Rich-Text Editor

Click **Save** when all data for the field has been entered.

SCE Configuration

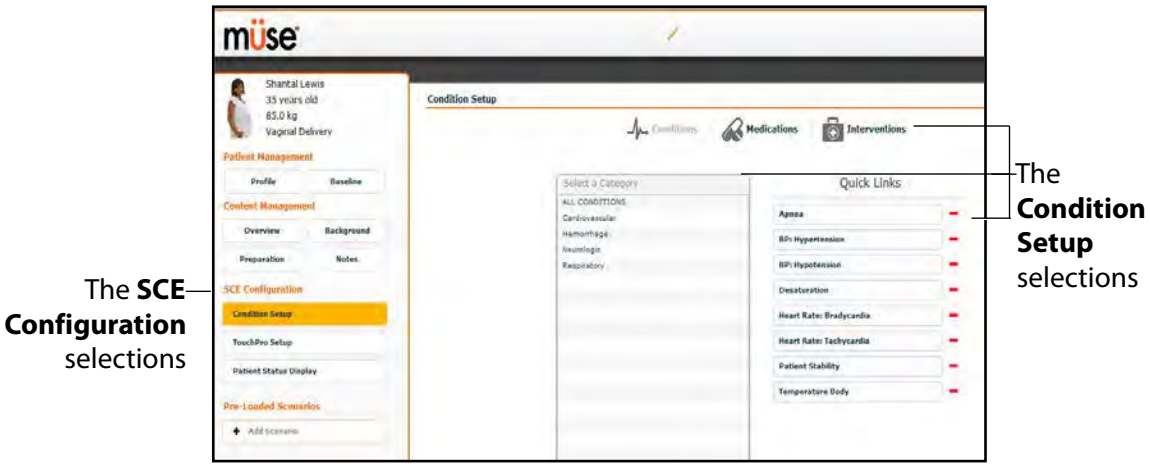
Setting up the Conditions, the TouchPro software and the Patient Status Display is achieved by clicking the buttons under the **SCE Configuration** heading in the SCE Editor.

The SCE Configuration Buttons

Condition Setup Screen and Creating Quick Links

Click **Condition Setup** to access the Condition Setup screen. From the Condition Setup screen, conditions, medications and interventions can be preconfigured for the SCE creating Quick Links.

On the Condition Setup screen, **Conditions**, **Medications** and **Interventions** buttons are available. To navigate through available conditions and interventions, click the **Conditions, Medications** and **Interventions** buttons.



The TouchPro Setup Panel

To create a Quick Link, drag and drop the desired choice from the Conditions, Medications or Interventions palette to the list of Quick Links.

Click the minus sign to remove a Quick Link from the SCE.

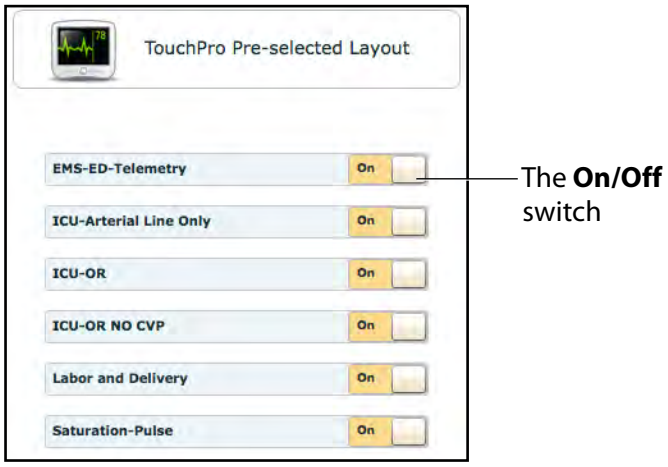
Modifying the TouchPro Setup

Use the **TouchPro Setup** link to access the TouchPro Setup panel.

From the TouchPro Setup panel, TouchPro layouts can be enabled or disabled for the selected SCE.

When a layout is enabled, it is available to be used in the TouchPro software with the selected SCE. When a layout is disabled, it is unavailable to be used in the TouchPro software with this SCE.

Click the **On/Off** switch next to a layout to enable or disable it.



The TouchPro Setup Panel

Patient Status Display

To configure the Patient Status Display displayed on the Run screen, click **Patient Status Display** under the SCE Configuration heading on the SCE Editor.

The Patient Status Display screen appears.

The Patient Status Display Screen

To modify the Patient Status Display, drag and drop the desired waveform, numeric volume, CTG or graphic widgets from the Available Widgets panel to an available Patient Status Display space.

NOTE: Waveform and CTG widgets occupy two spaces.

Once the desired widget is placed, click the widget to change the physiologic parameter displayed.

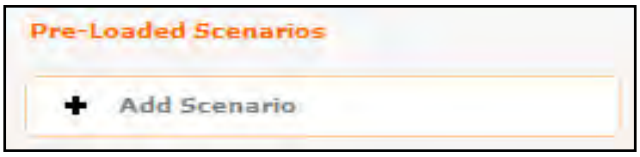
NOTE: The parameter displayed on the CTG and Graphic widgets cannot be changed.

Adding a Scenario from the SCE Editor

SCEs incorporate scenarios that contain preprogrammed physiology. Scenarios can be added to SCEs to enhance patient physiology. When a scenario is added to an SCE from the SCE Editor, the scenario becomes associated with the SCE and begins automatically when the SCE is run.

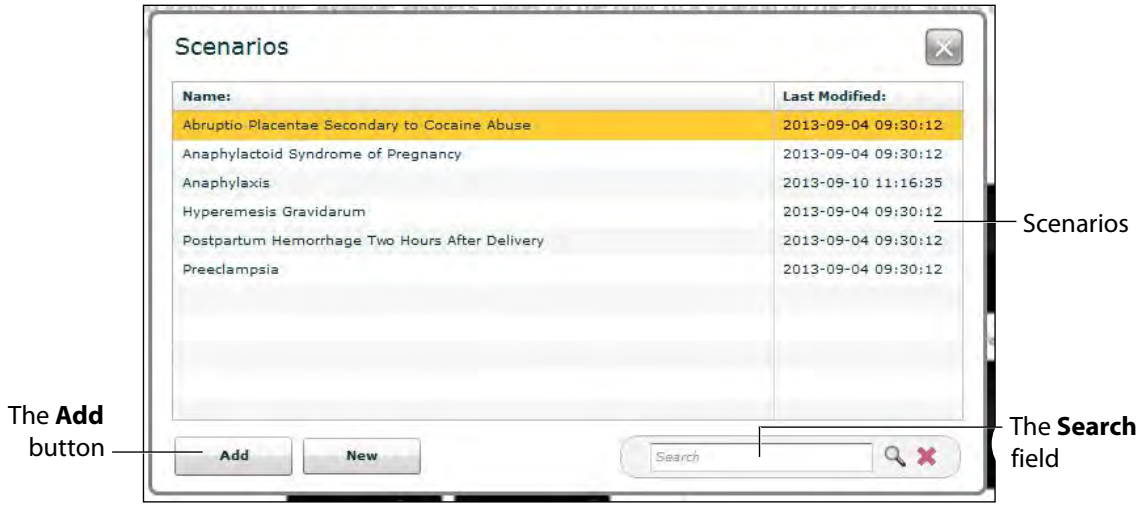
To add a scenario to an SCE from the SCE Editor:

1. From the Review screen, click the **Add Scenario** button under the Preloaded Scenarios heading.



The Add Scenario Button

The Choose Scenario dialog box appears.



The Choose Scenario Dialog Box

2. Select a saved scenario from the Choose Scenario Dialog Box.

   The **Search** field can be used to search for a scenario to select.

3. Click **Add**.

   The scenario is added to the SCE and is listed on the SCE Editor beneath the Pre-Loaded Scenarios heading.

Developing Scenarios

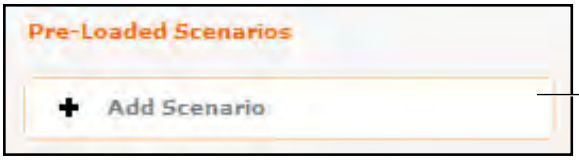
The Scenario Designer allows users to create and edit scenarios.

To access the Scenario Designer, create a new scenario or choose an existing scenario to edit.

Creating a New Scenario

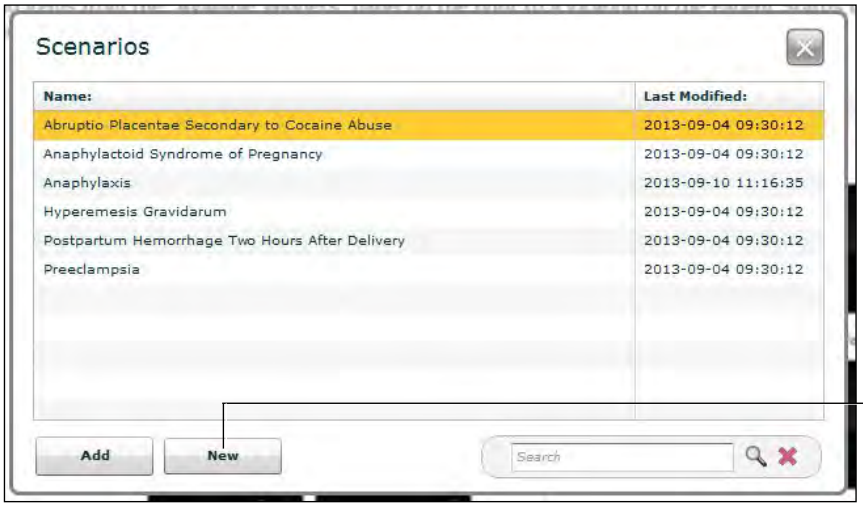
To create a new scenario:

1. From the SCE Editor, under the Pre-Loaded Scenarios heading, click the **Add Scenario** button.



The Pre-Loaded Scenarios Heading

   The Choose Scenario dialog box appears.

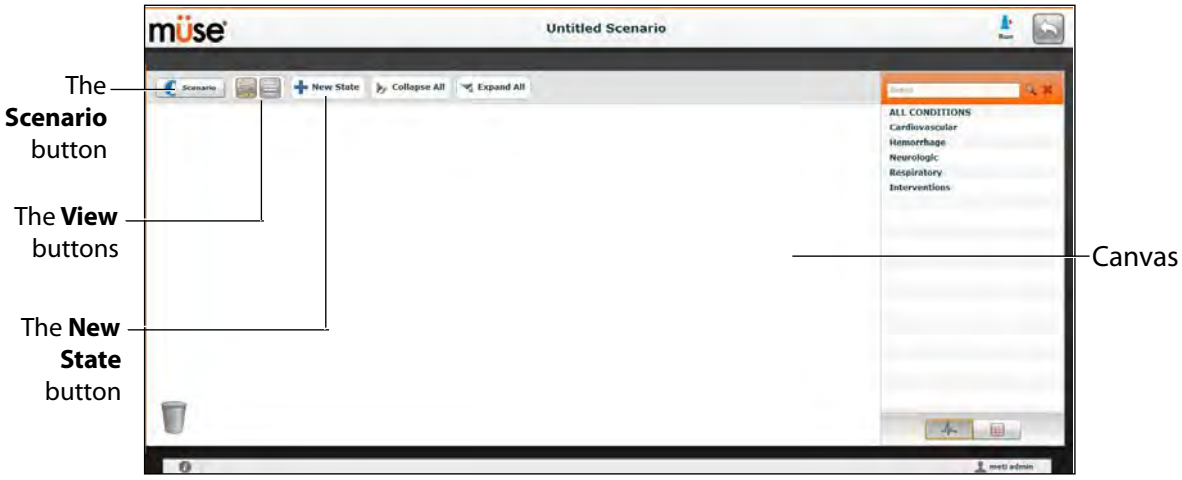


The Choose Scenario Dialog Box

2. Click **New**.

   The Scenario Designer appears, displaying the new, untitled scenario.

From the Scenario Designer, scenario states can be added, modified, and deleted.



The Scenario Designer

The **Scenario** button is used to manage states and save the scenario.

The **View** buttons toggle between Scenario Designer views.

The **New State** button is used to add new states.

Once created, states are displayed on the Scenario Designer canvas.

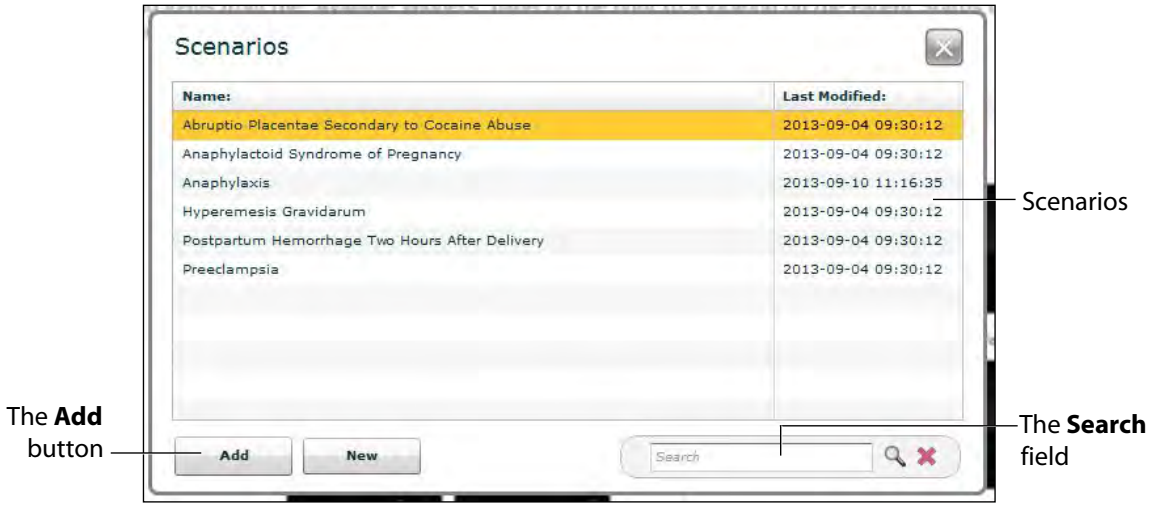
Editing a Scenario

To edit a scenario:

1. From the SCE Editor, under the Pre-Loaded Scenarios heading, click the **Add Scenario** button.

The Pre-Loaded Scenarios Heading

The Choose Scenario dialog box appears.



The Choose Scenario Dialog Box

2. Select a saved scenario from the Choose Scenario Dialog Box.

   The **Search** field can be used to search for a scenario to select.

3. Click **Add**.

   The scenario is added to the SCE and is listed on the SCE Editor beneath the Pre-Loaded Scenarios heading.

4. Click the scenario's name under the Pre-Loaded Scenarios heading.

   The Scenario Designer appears, displaying the selected scenario.

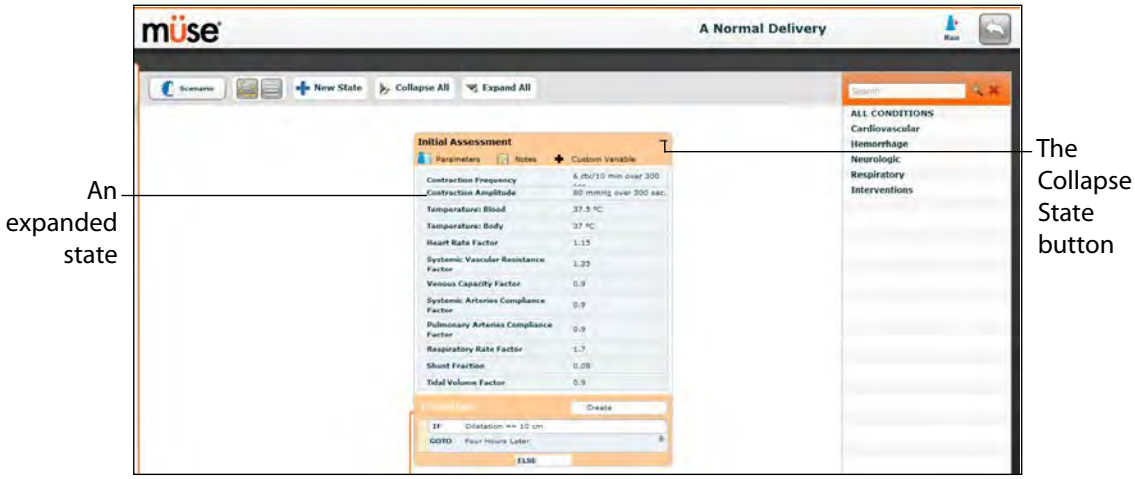
The Scenario Designer

Scenario Designer Views

The Scenario Designer has two views: the Graphical view and the List view. The Graphical view allows users to map out scenario states. The List view places the states and transitions into a linear format.

The Scenario Designer View Buttons

Click the **Graphical view** button to utilize the Graphical View.



The Graphical View

From the Graphical View, double-click on any state to expand it and view all its components. Click the **Collapse State** button to collapse an expanded state.

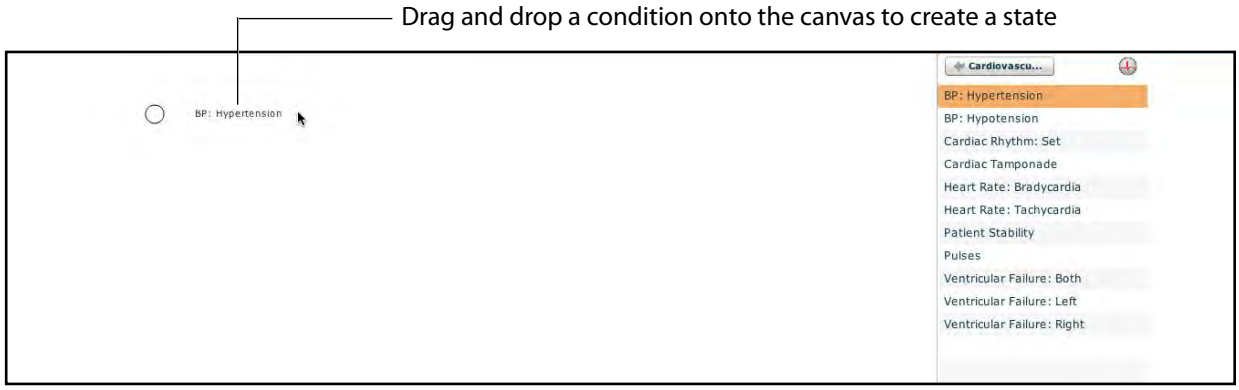
Click the **List view** button to utilize the List view.

The List View

From the List View, click the **Expand/Contract** arrow to the left of any state to expand it and view all its components. Click the arrow again to collapse the state.

Adding Scenario States

When beginning to create a new scenario, the canvas is blank. Scenario states can be created by dragging and dropping conditions from their respective menus on the right side of the Scenario Designer to the canvas.



The Scenario Designer Canvas

Or, a new, empty state can be added using the **New State** button.

To add a new state using the **New State** button:

1. Click the **New State** button on the upper left side of the Scenario Designer.

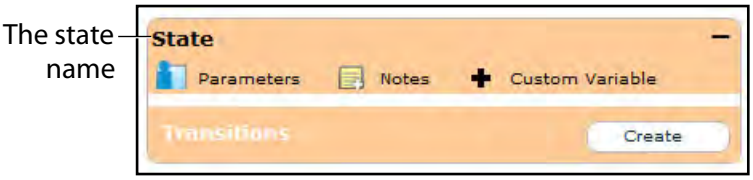
The New State Button

A new state appears.

A New State

2. From the Graphical View, double-click the new state, or from the Line Item View, click the **Expand/Collapse** arrow to the left of the state to expand it.

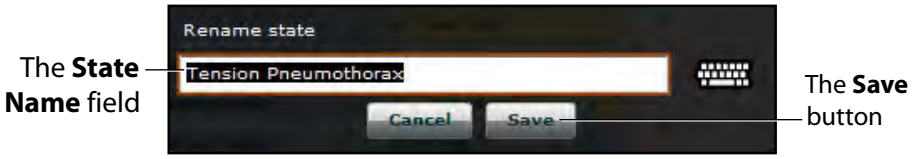
The state expands and additional options appear.



The Expanded State

3. Double-click the state name. (By default, new states are named "State.")

   The Rename state window appears and contains a field for entering a new state name.



The Rename State Window

4. Enter a new state name.

   NOTE: When naming a Scenario State, the state name may NOT exceed 127 characters Additionally, scenario file and state names CANNOT contain any special characters, such as (/ \ : * ? < > % | ")

5. Click **Save**.

   The state is renamed.

Modifying Scenario States

Once a scenario state has been placed on the canvas, it can be modified. Additional parameters, transitions and notes can be added. Each state can contain multiple parameters and transitions. Double-click the state name to rename it.

Click the **Collapse State** button to minimize the state.

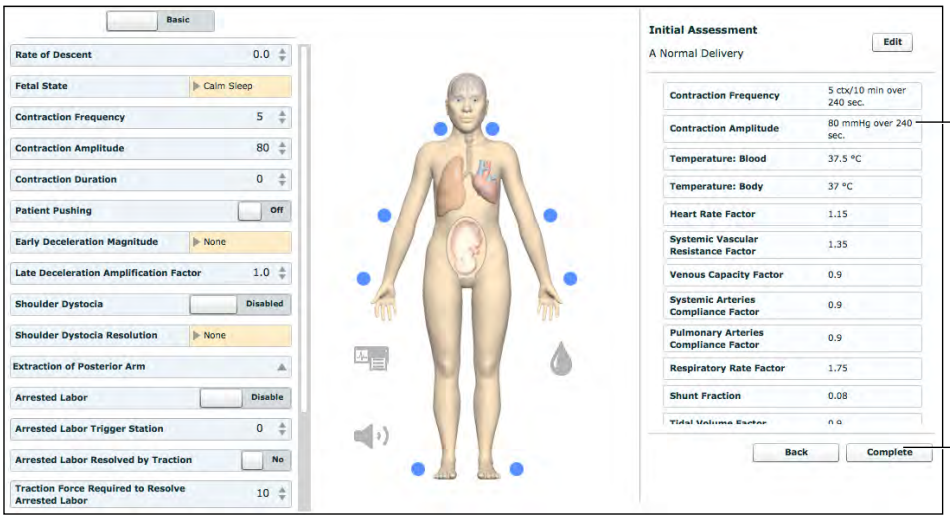
Double-click the collapsed state to expand it.

Adding Conditions, Interventions and Parameters

Conditions can be added to states by dragging and dropping them from the **Conditions** menu to the desired state.

To add parameters to a state, click the **Parameters** button within the state.

The State Parameters screen appears.



The State Parameters Screen

Click the various organs to change the views, and then select the desired parameter. Once a parameter has been selected, it appears in the State Parameters panel on the right side of the screen.

Add as many parameters as needed. Added parameters appear consecutively within the state. Drag and drop to reorder as needed. Click **Complete** to save and exit the State Parameters screen, or click **Back** to exit without saving.

NOTE: If the physiology of any of the parameters conflicts, the Müse software reflects the physiology of the last parameter entered.

Adding Transitions

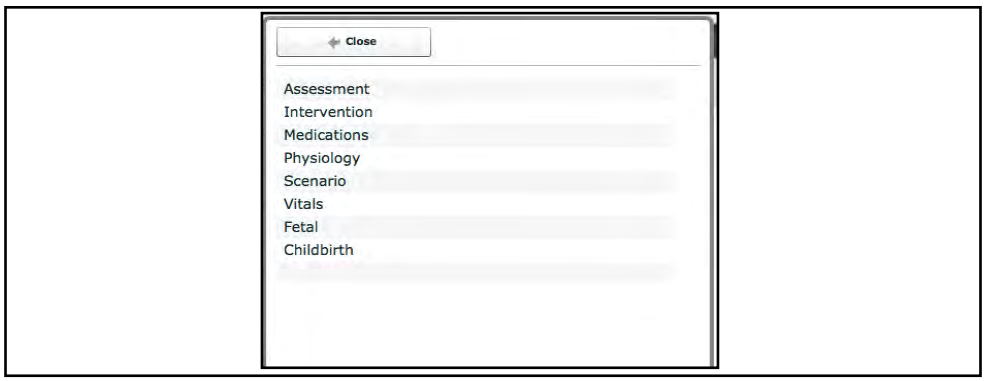
To add a transition, the scenario must have both an original state and a state that results from the transition.

To add a transition:

1. Click the **Create** button in the original state.

A State

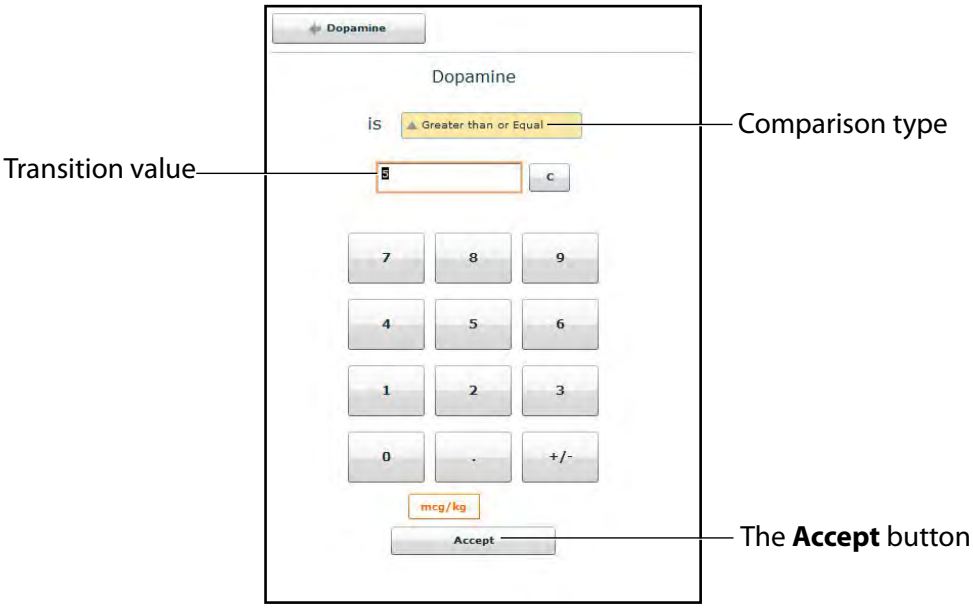
The Transitions Menu appears, listing all available transition variable types.



The Transitions Menu

2. Select the desired variable type. For example, if a transition based on the administration of medication is desired, select **Medications** and then select the desired medication from the list.

   Once a medication is selected, The Medication Transition menu appears, asking for the comparison type and transition value.



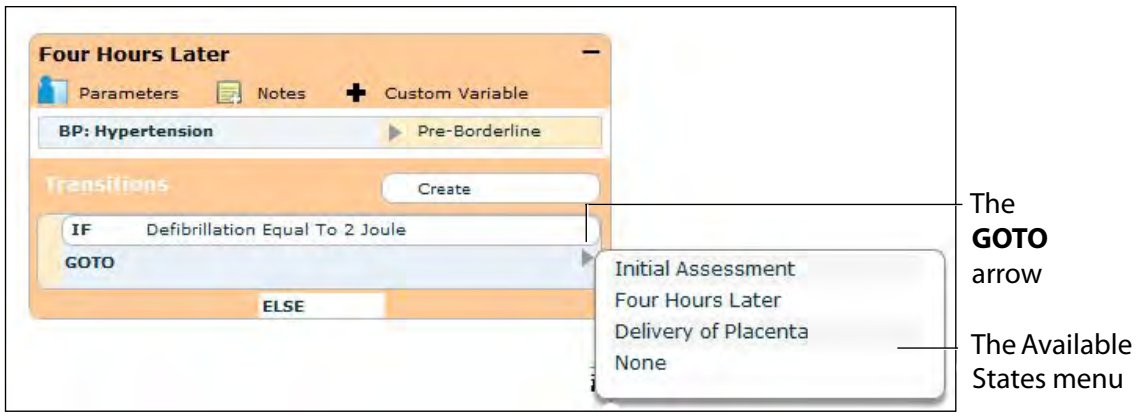
The Medication Transition Menu

   Follow the same steps to make selections from similar menus for the **Assessment**, **Intervention**, **Physiology**, **Scenario, Vitals,** and **Fetal and Childbirth** variable types.

3. Once the variable values (e.g., comparison type and transition value) have been selected, click **Accept**.

The selected transition variable is listed beneath the original state on the Scenario Designer.

4. From the Scenario Designer, click the **GOTO** arrow beneath the new transition variable.

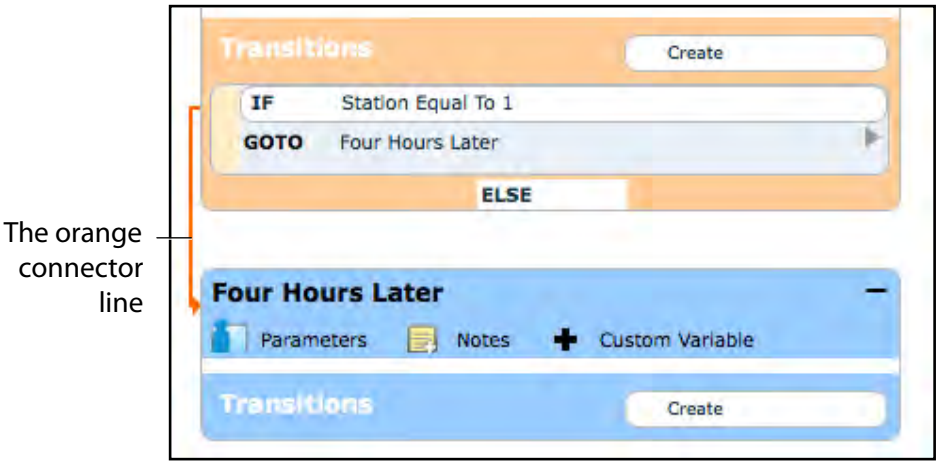


The Scenario Designer

The Available States menu appears, listing all the available states.

5. Select a state from the menu.

An orange connector line appears, indicating that the states are now linked by a transition.



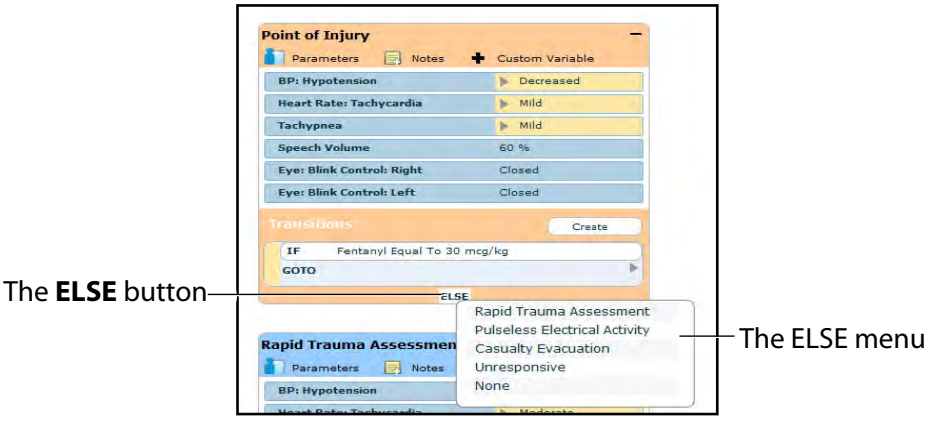
The Scenario Designer

ELSE Transitions

An ELSE transition is used to transition to a state automatically when none of the other programmed transitions occur.

Before specifying an ELSE transition from a state, the state must first contain at least one other transition.

To add an ELSE transition, click **ELSE** in the original state. The ELSE menu appears, listing all the available states.



The Scenario Designer

Select the desired state. A black connector line appears, indicating that the states are now linked by an ELSE transition.

The Scenario Designer

Deleting Scenario States

To delete a state, drag and drop the state into the Trash.

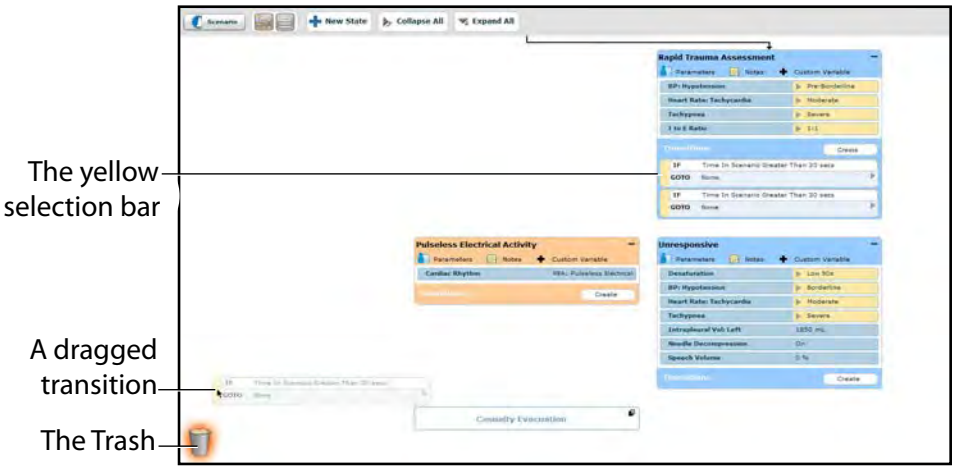
States can be dragged and dropped to the Trash from the Graphical view or the Line Item view.

Deleted states remain in the Trash until you log out of the software or the Trash is cleared.

Deleting Parameters and Transitions

To delete a parameter or transition, from an active state, drag and drop the desired parameter or transition into the Trash.

To drag a parameter, click anywhere within the parameter. To drag a transition, click the yellow selection bar to the left of the transition.



The Scenario Designer

Parameters and transitions can be dragged and dropped to the Trash from the Graphical view or the Line Item view.

Deleted parameters and transitions remain in the Trash until you log out of the software or the Trash is emptied.

Saving the Scenario

At any time during scenario creation or modification, the scenario can be saved.

To save a scenario:

1. Click the **Scenario** button in the upper left of the Scenario Designer.

   The Scenario drop-down menu appears.

The Scenario Drop-Down Menu

2. To save the most recent version of a modified scenario, click **Save**,

   OR

   To save a modified scenario as a new scenario, leaving the original scenario intact:

   a. Click **Save As**.

      When **Save As** is clicked, the Save Scenario dialog box appears.

The Save Scenario Dialog Box

   b. Enter the name for the scenario in the **Enter scenario name** field.

   c. Click **Save**.

NOTE: When naming a scenario, the scenario name CANNOT exceed 128 characters. Additionally, scenario file names CANNOT contain any special characters, such as / \ : * ? < > % |“

Emptying the Trash

To empty the Trash, click the **Trash** icon in the lower left corner of the Scenario Designer.

The Scenario Designer

The Trash List appears.

The **Empty Trash** button

The Trash List

Click **Empty Trash** to empty the Trash. If you do not wish to delete the items listed, they can be dragged back into the scenario, at which time they are removed from the Trash.

Logging out of the software automatically empties the Trash.

IMPORTANT: Items emptied from the Trash cannot be retrieved.

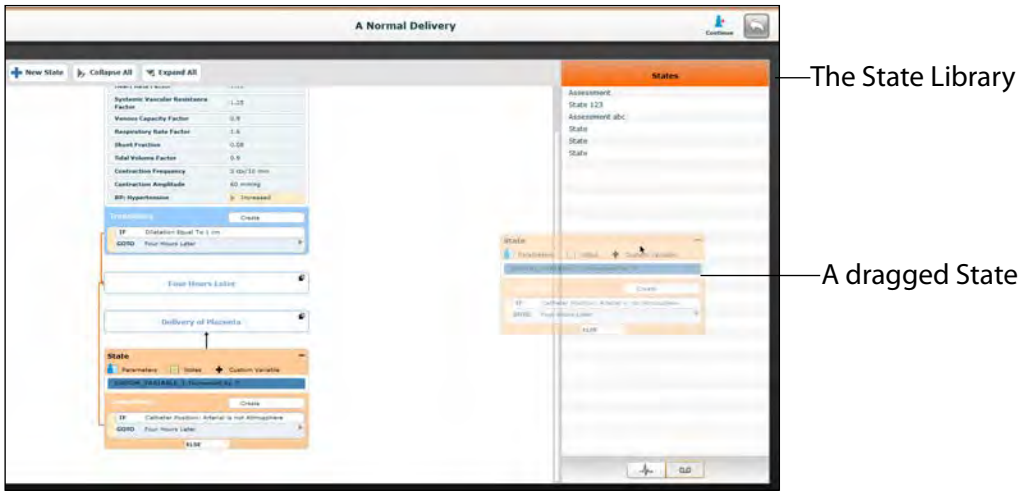
Saving States to the State Library

Users can save states to the State Library for later use.

To access the State Library, click the **States** button in the bottom right corner of the Scenario Designer.

The States Button

To save a state, drag and drop the state into the State Library button.



The Scenario Designer

The state is stored in the library.

The State Library appears, listing all saved states.

The State Library

To exit the State Library, click **Conditions**.

The **Conditions** button

The Conditions Button

Administrative Tools

The Müse software has administrative tools that allow users to manage logs, stored content, users and system settings. The administrative tools are accessed via the Administrative Tools buttons, located on the Home page.

The Administrative Tools Buttons

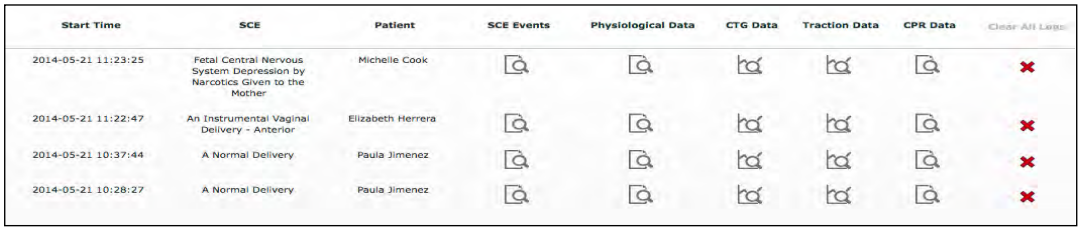
Click the **History** button to view and manage simulation session logs.

Click the **System Administration** button to manage stored content, user accounts, groups and system settings.

Click the **Account Profile** button to manage and determine preferences for the active account.

History

From the History screen, users can view and export simulation session logs. Each simulation session is listed with the Start Time, the title of the SCE and the Patient's name. In addition, the SCE Events, Physiological Data, CTG data, Traction data, and CPR data are available for review and export.



Start Time	SCE	Patient	SCE Events	Physiological Data	CTG Data	Traction Data	CPR Data	Clear All Logs
2014-05-21 11:23:25	Fetal Central Nervous System Depression by Narcotics Given to the Mother	Michelle Cook						
2014-05-21 11:22:47	An Instrumental Vaginal Delivery - Anterior	Elizabeth Herrera						
2014-05-21 10:37:44	A Normal Delivery	Paula Jimenez						
2014-05-21 10:28:27	A Normal Delivery	Paula Jimenez						

The History Screen

By clicking the **SCE Events** link of a Simulation Session, users can view the entire log of the simulation and all the events that occurred during the SCE.

When the **Physiological Data** link of a Simulation Session is clicked, users can view all the physiological data that occurred during the SCE.

Clicking the **CTG Data** link of a Simulation Session displays the CTG data associated with the SCE.

The **Traction Data** and **CPR Data** links display the traction and CPR data associated with the SCE, if applicable.

On the SCE Events, Physiological Data and CPR Data screens, there is an **Export** button that, when clicked, exports the data to a CSV file that can be stored on an external device.

The **Clear All Logs** option will delete all logs associated with the SCE.

System Administration

From the System Administration screen, users can control and access Content Management, User Accounts, Groups, and System Settings.

To access the System Administration screen, click the **System Administration** button from the Home page.

The System Administration Button

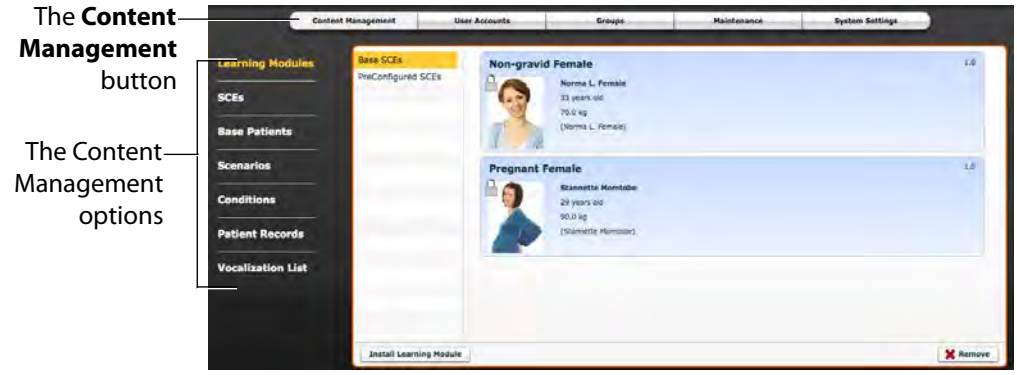
The System Administration screen is displayed.

The System Administration Screen

Content Management

To access the Content Management options, from the System Administration screen, click **Content Management**.

From the Content Management options, users can manage learning modules, SCEs, Base Patients, Scenarios, Conditions, Patient Records, and Vocalization List.



The System Administration Screen

Learning Modules

From the Learning Modules panel, learning modules can be installed or deleted.

When the Content Management button is selected, the Learning Modules panel appears by default. If another panel has been selected, return to the Learning Modules panel by clicking the **Learning Modules** link.

The Learning Modules Panel

To install a learning module:

1. Click **Install Learning Module**.

   The Select file to upload dialog box appears.

2. Locate the correct learning module file on the external storage device or the hard drive location where the SCE file is saved. The file extension is ***mlm***.

3. Select the file and click **Select** or **Open**.

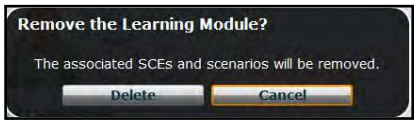
4. Refresh the screen by clicking the **Home** button in the Müse software and then return to the Learning Modules panel.

   The learning module appears on the Learning Modules panel and is available for use.

To delete a learning module from Müse:

1. Select a learning module from the Learning Modules panel.
2. Click the **Remove** button.

   The Remove Learning Module warning appears.



The Remove Learning Module Warning

3. Click **Delete**.

   The learning module and all its SCEs are deleted.

   NOTE: Preconfigured learning modules cannot be deleted. If a user attempts to delete them, a failure message appears.

SCEs

From the Content Management options, click **SCEs** to access the SCEs panel.

The SCEs panel appears.

The SCEs Panel

All user-created SCEs are listed in the SCEs panel.

On the SCEs panel, users can review, copy, delete, import and export the SCEs they have created.

NOTE: SCEs purchased from CAE Healthcare CANNOT be exported.

Click **Import SCE** to import an SCE from an external device or the hard drive location where the SCE file is saved. Click **Export** to export an SCE to an external device. The SCE file extension is ***sce***.

Base Patients

From the Content Management options, click **Base Patients** to access the Base Patients panel.

The Base Patients panel appears.

The Base Patients Panel

All Patients are listed in the Base Patients panel.

From the Base Patients panel, users can rename, review, delete and export Patients they have created by clicking the respective buttons next to each Patient.

Click **Import Patient** to import a Patient file from an external device or the hard drive location where the SCE file is saved.

Use the **Rename** button next to a patient to give the patient a different name or the **Delete** button to delete the patient.

The **Export** button next to each patient can be used to export the Patient file to an external device. The Patient file extension is **pat**.

NOTE: Preconfigured CAE Healthcare Base Patients have a lock symbol in the upper-left corner of the picture and CANNOT be renamed, deleted, or exported.

Scenarios

From the Content Management options, click **Scenarios** to access the Scenarios panel.

The Scenarios panel appears.

The **Scenarios** link

The **Import Scenario** button

The **Create New Scenario** button

The Scenarios Panel

All Scenarios are listed in the Scenarios panel.

From the Scenarios panel, users can rename, review, delete, import and export scenarios they have created by clicking the respective buttons within each scenario. Locked scenarios can only be reviewed.

Users can also create new scenarios from the Scenarios screen by clicking the **Create New Scenario** button.

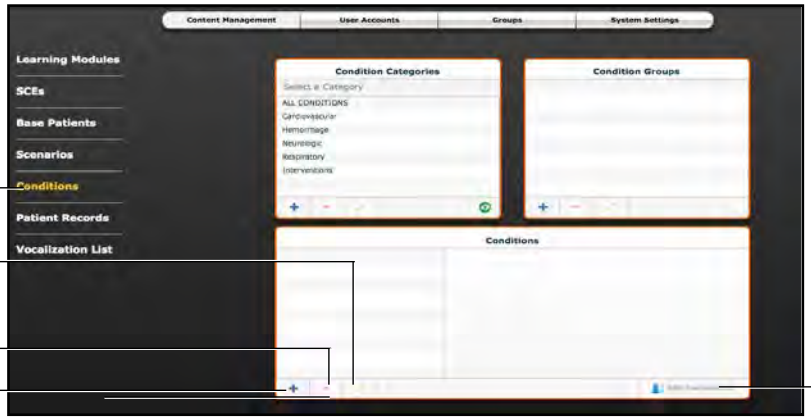
Click **Import** to import a scenario file from an external device or the hard drive location where the SCE file is saved. Click **Export** to export a scenario file to an external device. The scenario file extension is ***mss***.

NOTE: Locked CAE Healthcare scenarios CANNOT be exported.

Conditions

From the Content Management options, click **Conditions** to access the Conditions Editor.

The Conditions Editor appears.



The Conditions Editor

All conditions can be viewed in the Conditions panel by selecting their associated categories and groups from the Condition Categories and Condition groups panels.

From the Conditions Editor, users can create new Conditions to be used in SCEs. To create a new condition:

1. From the Condition Categories panel, select a category.

   NOTE: Conditions CANNOT be added to the **Interventions** category.
2. From the Condition Group panel, select a group.
3. In the Conditions panel, click the **Add** button.

   The New Condition Name dialog box appears.
4. Enter a name for the condition in the New Condition Name dialog box.
5. Click **Save**.

   The condition is added to the selected Condition category and group.
6. From the Conditions panel, select the new Condition.
7. Click the **Edit Parameters** button.

   The Parameters screen appears.
8. From the Parameters screen, select the desired Condition parameters.
9. Click **Complete**.

   The condition is saved with the selected parameters.

New condition categories and groups can also be added by clicking the **Add** button in the Condition Categories and Condition Groups panels.

Use the **Delete** and **Rename** buttons in each panel to delete or rename a Condition, group or category.

NOTE: CAE Healthcare conditions, groups and categories cannot be deleted or renamed.

Patient Records

Patient records can be uploaded to Müse for display in the TouchPro software. Once uploaded, a patient record is available for use with any SCE.

Patient Records are managed from the Patient Records panel on the **Content Management** tab of the System Administration screen.

The Patient Records Panel

The following patient record file types can be uploaded to Müse:

- JPG or JPEG images
- GIF images
- PNG images
- XPS images
- PDF documents
- MPEG videos
- MOV videos
- MP3 audio files

A single patient record file cannot exceed 20MB.

To upload a patient record:

1. From Patient Records panel, click **Upload Patient Records**.

   A file selection window appears.

2. Select the desired file and click **Open** or **OK.**

   The file is uploaded and is available to display in the TouchPro software.

Müse can store at least 2GB of patient record files, depending on the disk space available. To ensure adequate space, please delete patient records when they are no longer needed.

To delete a patient record:

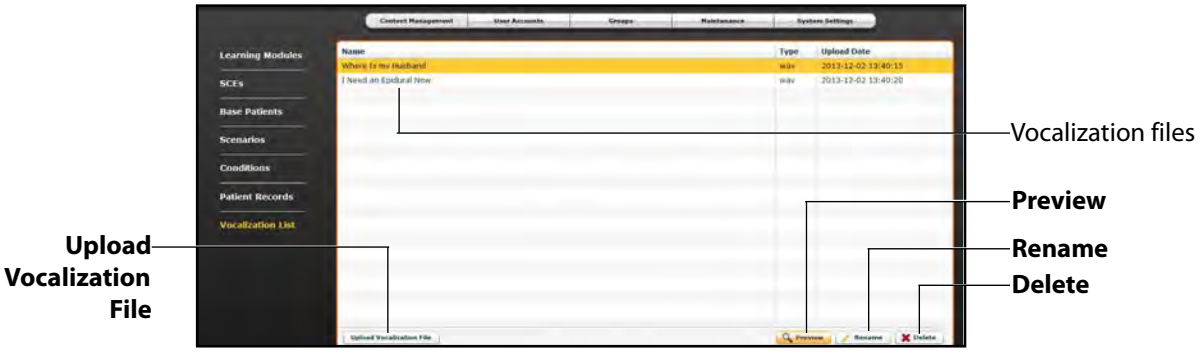
1. From the Patient Records panel, select the patient record to delete**.**
2. Click **Delete**.

   The patient record is deleted and is no longer available to display in the TouchPro software.

Individual patient records can also be previewed, renamed or exported by selecting the record and clicking **Rename**, **Export** or **Preview**.

Vocalization List

The MFS maternal mannequin has the ability to voice custom sounds. Custom sounds are managed from the Vocalization List panel on the **Content Management** tab of the System Administration screen.



The Vocalization List Panel

The following vocalization file types can be uploaded to Müse:

- .wav

A single vocalization file cannot exceed 1MB.

To upload a vocalization file:

1. From Vocalization List panel, click **Upload Vocalization File**.

   A file selection window appears.
2. Select the desired file and click **Open** or **OK.**

   The file is uploaded and is available to use during simulation.

Müse can store at least 2GB of patient record and vocalization files, depending on the disk space available. To ensure adequate space, please delete files when they are no longer needed.

To delete a vocalization file:

1. From the Vocalization List panel, select the vocalization to delete**.**
2. Click **Delete**.

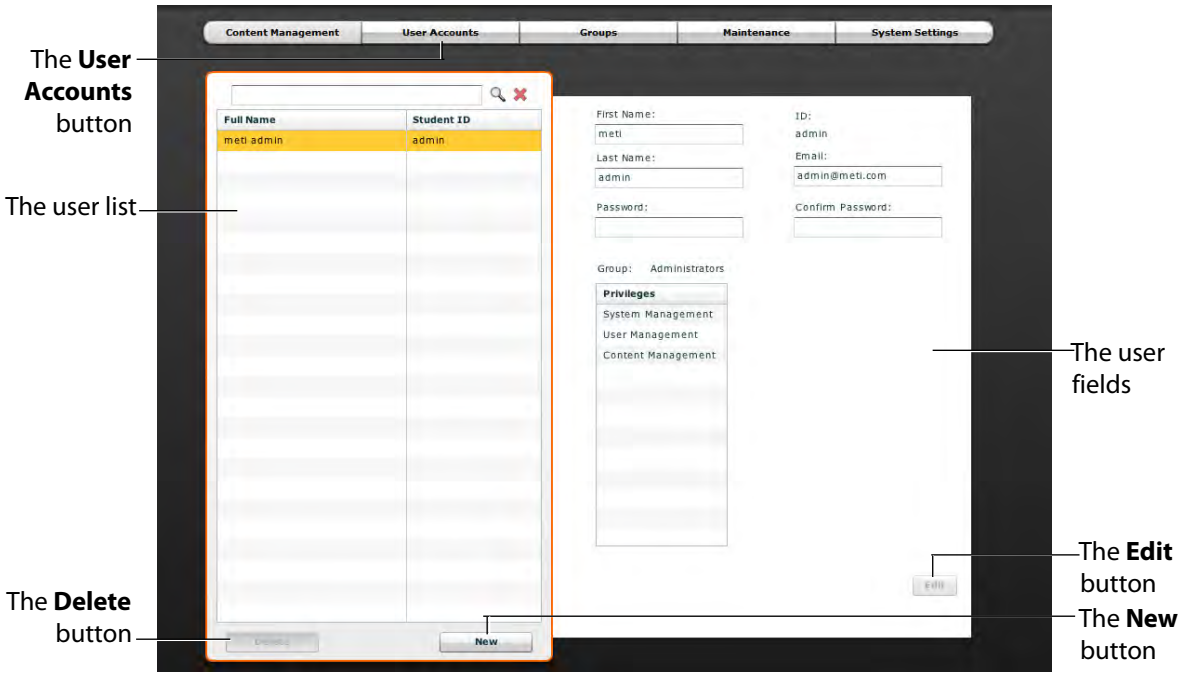
   The vocalization is deleted and is no longer available to use during simulation.

Individual vocalization files can also be previewed or renamed by selecting the vocalization and clicking **Rename** or **Preview**.

User Accounts

To access the User Accounts panel, from the System Administration screen, click the **User Accounts** button. The User Accounts panel appears.

From the User Accounts panel, users can create, edit and delete users.



The User Accounts Panel

NOTE: User Accounts functions are available only to users with the User Management or System Management privilege.

Creating a User

To create a new user:

1. From the User Accounts panel, click **New**.

   The New Account Creation panel appears.

2. In the New Account Creation panel, enter the user's personal data and choose a password.

3. Assign the user to a group by selecting a group from the **Group** menu.

   NOTE: A user can only be assigned to one group.

4. Click **Create**.

   The new user is created and the New Account Creation panel disappears.

Editing a User

To edit a user's information or privileges:

1. On the User Accounts panel, select the user to edit.
2. Click **Edit**.

   The user fields become editable.
3. Make the desired changes.
4. Click **Save**.

Deleting a User

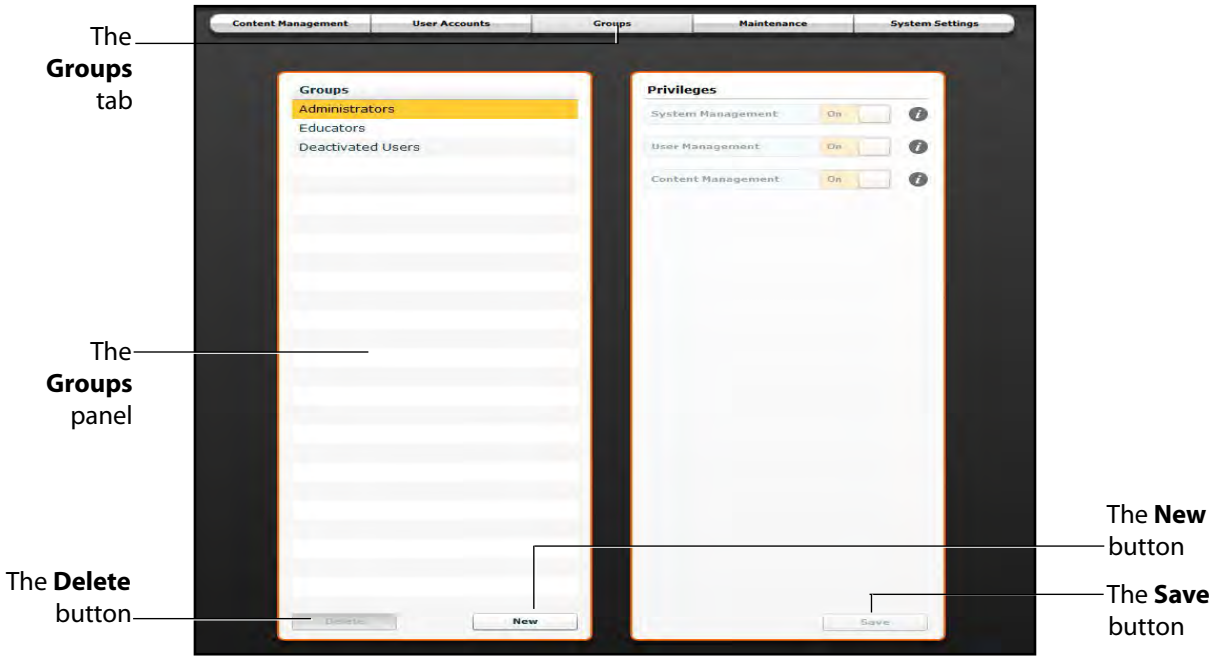
To permanently delete a user, from the User Accounts panel, select a user and click **Delete**. When the User Deletion Warning box appears, click **Yes**.

The user account and the data associated with it are deleted. However, the administrative user deleting the account becomes the owner of any SCEs, scenarios or patients created by the user being deleted (i.e., the SCEs, scenarios and patients created by the deleted user are moved to the deleting user's account).

Groups

Users are assigned to groups to define access privileges. To access the Groups panel, from the System Administration screen, click **Groups**.

The Groups panel appears.



The Groups Panel

NOTE: Groups functions are available only to users with the User Management or System Management privilege.

From the Groups panel, users can create new groups, delete groups and assign privileges to groups.

In the Groups panel, three groups appear by default:

- Administrators
- Educators
- Deactivated Users

Each default group has privileges assigned.

Maintenance

The Maintenance panel is used to flush fluids from the simulator. To access the Maintenance panel, from the System Administration screen, click **Maintenance**.

The Maintenance panel appears.

The Maintenance Panel

For more information on flushing the system, see the *Care and Maintenance* section of this user guide.

Privilege System

The Müse software has three different privileges:

- System Management
- User Management
- Content Management

User Management and Content Management can be assigned independently or combined. The System Management privilege contains all privileges.

System Management

Users with the System Management privilege have access to all features of the Müse software, including the benefits of the User Management and Content Management privileges, listed below. Users with the System Management privilege can also view system settings, backup and restore data and apply software updates.

User Management

Users with the User Management privilege can manage all users and groups.

Content Management

Users with the Content Management privilege can create and manage all SCEs.

Creating a New Group

To create a new Group:

1. From the Groups panel, click **New**.

   The **Group Name** field appears.
2. Enter the name of the Group in the **Group Name** field.
3. Click **Create Group**.

   The group appears in the Groups panel. Privileges can now be selected.
4. Select the privilege(s) to be assigned to the Group.
5. Click **Save**.

Deleting a Group

Groups can be deleted when they are no longer needed. Once a Group is deleted, all users who were affiliated with the Group are moved to the Deactivated Users Group.

To permanently delete a Group, select the group to be deleted from the Groups panel and click **Delete**. When the Group Deletion warning box appears, click **Yes**.

Providing Access to Content Only

To provide users with the ability to create and manage SCEs but not the ability to manage users or groups:

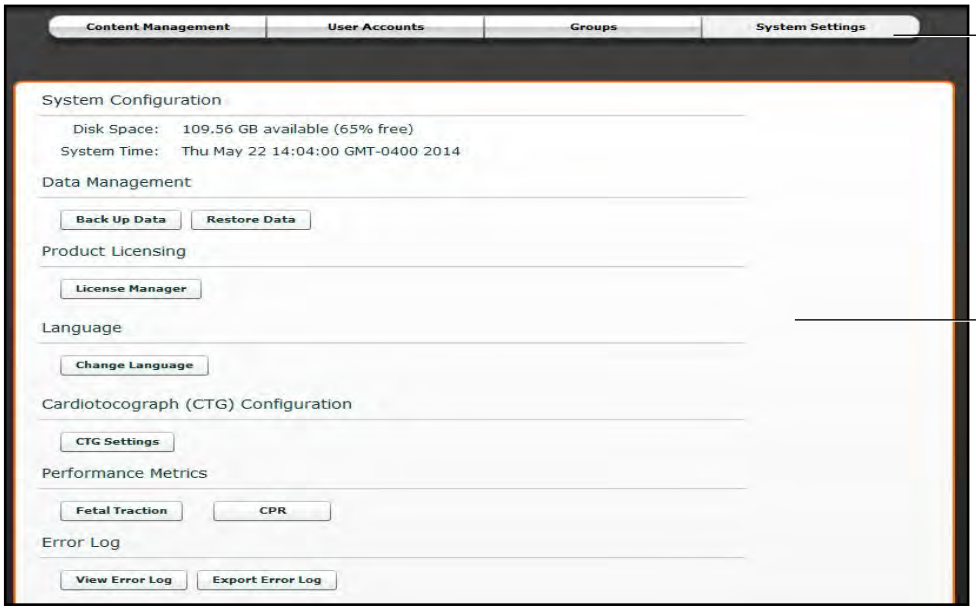
1. Create a new group called Content Only.
2. Assign the group the Content Management privilege. Do NOT assign any other privileges to the group.
3. On the **User Accounts** tab, create or edit the desired users, placing each user in the Content Only group.

System Settings

From the System Settings panel, users can manage the System Configuration, Data Management, Product Licensing, Language, CTG Configuration, and Performance Metrics of the Müse software.

To access the System Settings panel, from the System Administration screen, click **System Settings**.

The System Settings panel appears.



The System Settings Panel

NOTE: System Settings functions are available only to users with the System Management privilege.

System Configuration

Under System Configuration, Disk Space and System Time are displayed.

Data Management

The Data Management feature allows users to back up data to an external device. Users can also restore the backup data.

Backing Up Data

Users should back up data to protect and store content and user data.

To back up data:

1. On the System Settings panel, click the **Back Up Data** button.

The Back Up Data Button

   A Save dialog box appears.

2. Select a location to save the backed up data.
3. Click **Save**.

IMPORTANT: To protect content and user information, data should be backed up weekly.

Restoring Data

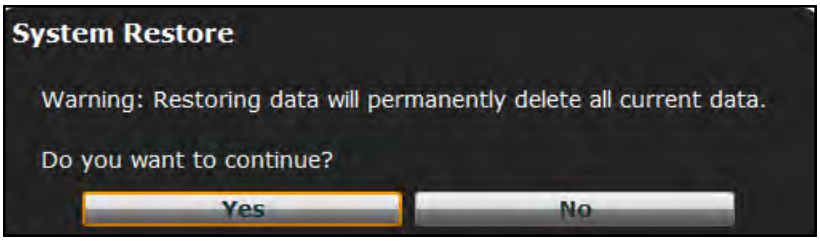
Users can restore data when the backed up data needs to be replaced on the software. Restoring data only restores the last backup and does NOT merge the backup data with the current data.

To restore backup data:

1. On the System Settings panel, click **Restore Data**.

The Back Up Data Button

The System Restore warning box appears stating that restoring data erases all current data and asks if you want to continue.



The System Restore Warning Box

IMPORTANT: Restoring data ERASES all current data and replaces it with the backed up data.

2. Click **Yes**.

   A select file dialog box appears.

3. Locate the appropriate .bak backup file to restore.
4. Click **Select**. The data is restored.

Product Licensing

To view product licensing information for your simulator or to enter a license key to activate your software, click **License Manager**.

Language

To change the language of the Müse software:

1. From the System Settings panel, under the Localization heading, Click **Change Language**.

   The Change Language dialog box appears.

2. Select a language from the dialog box.
3. Click **Accept**.

   The Müse user interface changes to the selected language.

NOTE: Only the English version of the User Guide is available via the software, regardless of the Müse language selection. To access the User Guide in other languages, please visit www.caehealthcare.com and click the **Support** link.

Cardiotocograph (CTG) Configuration

To configure the emulated CTG paper strip displayed on the CTG monitor:

1. From the System Settings panel, under the Cardiotocograph (CTG) Configurations heading, Click **CTG Settings**.

   The CTG Configurations dialog box appears.

2. From the dialog box, select a **Paper Type**, **Paper Speed** and **Paper Theme**.
3. Click **Accept**.

   The CTG strip is configured to the selected settings.

Performance Metrics

Acceptable limits for fetal traction and key CPR parameters can be set from the System Settings panel.

To set the maximum acceptable fetal traction:

1. From the System Settings panel, under the Performance Metrics heading, Click **Fetal Traction**.

   The Traction Threshold dialog box appears.

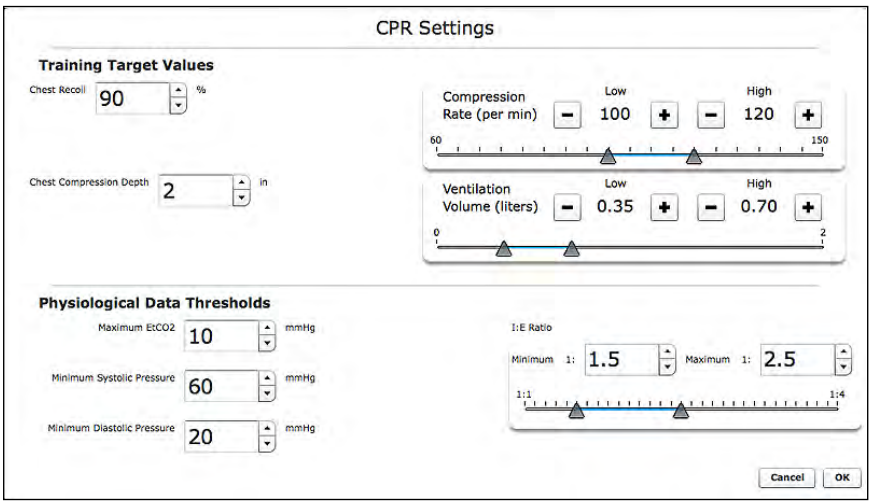
2. From the dialog box, enter a threshold value.
3. Click **OK**.

   The traction threshold is set.

To set CPR thresholds:

1. From the System Settings panel, under the Performance Metrics heading, click **CPR**.

The CPR Settings window appears.



The CPR Settings Window

2. Adjust the settings as desired.
3. Click **OK**.

   The settings are saved.

Error Log

The Error Log is available for technicians and is used when diagnosing the Müse software.

IMPORTANT: Do not clear the Error Log.

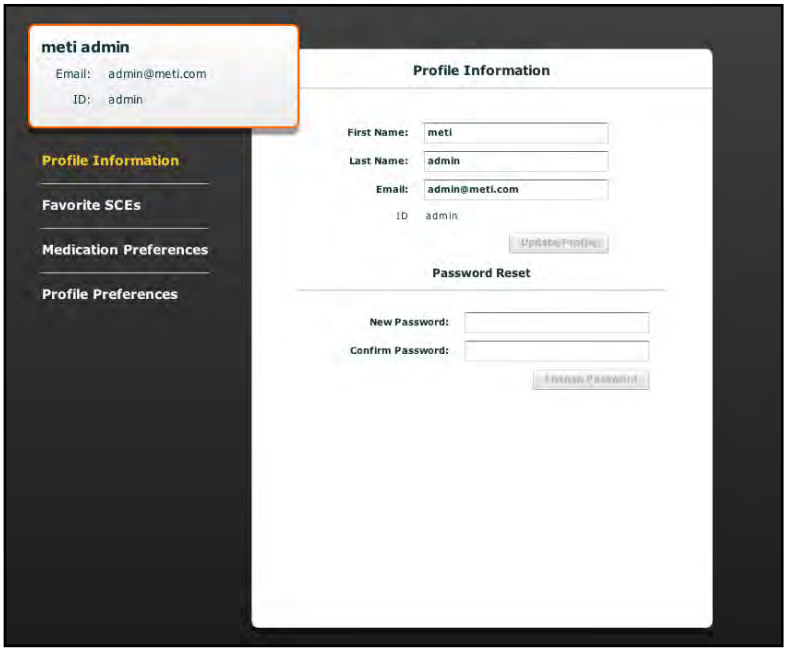
Account Profile

From the Account Profile screen, users can view, update and reset personal profile information. Users can also view and add favorite SCEs from this screen.

Click the **Account Profile** button to access the Account Profile features.

The Account Profile Button

The Account Profile screen appears.

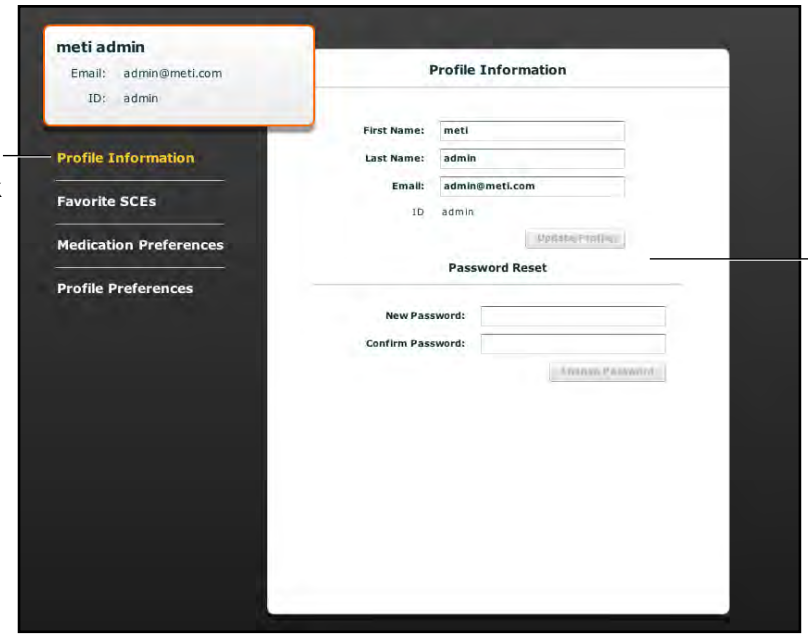


The Account Profile Screen

Profile Information

From the Account Profile screen, the Profile Information panel appears by default. If another panel has been selected, click **Profile Information** to return to the Profile Information panel.

From the Profile Information panel, users can change their profile information and reset their passwords.



The Account Profile Screen

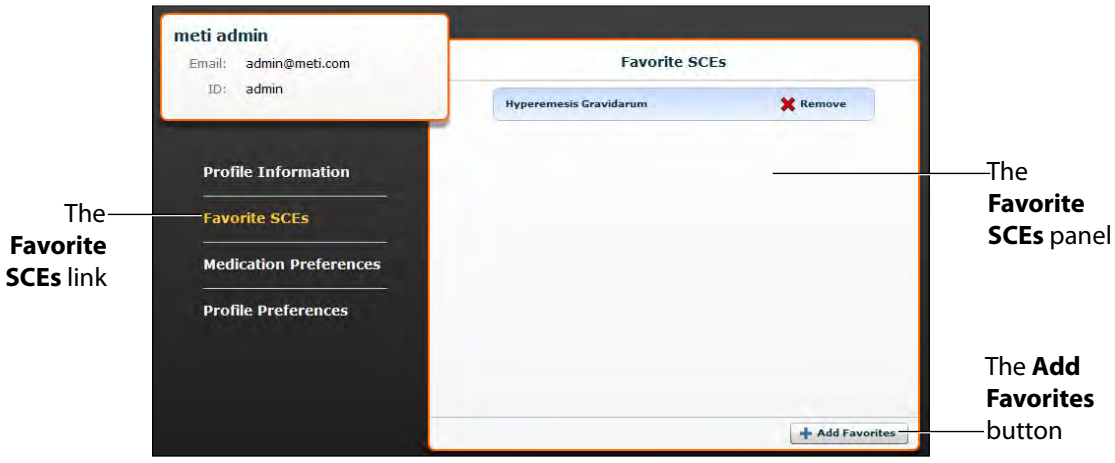
To change profile information, enter the new information in the appropriate fields and click **Update Profile** when finished.

To reset a password, enter the new password in the **New Password** field and re-enter the new password in the **Confirm Password** field. Click **Change Password** when finished.

IMPORTANT: If you change your username or password, you MUST use the new username and/or password upon your next login. You cannot access the system with the old username or password once it has been changed.

Favorite SCEs

To access the Favorite SCEs panel, click **Favorite SCEs** from the Account Profile screen. All of the logged-in user's favorite SCEs appear in the Favorite SCEs panel.



The Account Profile Screen

To add SCEs to the Favorite SCEs panel, click **Add Favorites**. The SCE Library appears. Select the desired SCE and it automatically appears in the Favorite SCEs panel.

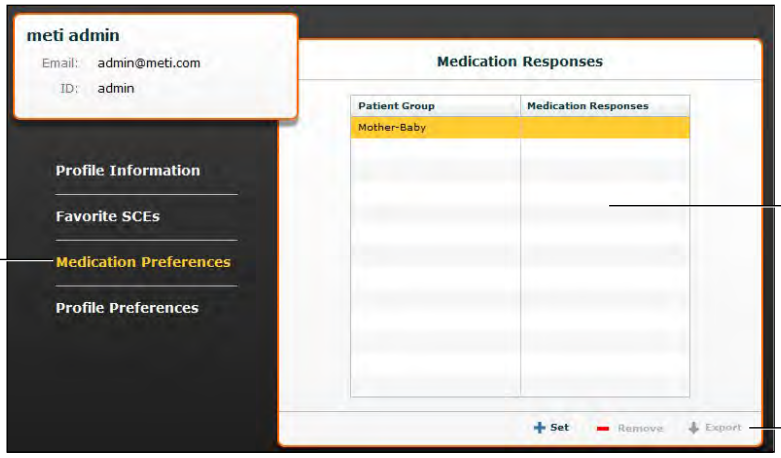
To remove a SCE from the Favorite SCEs panel, click the **Remove** button next to the name of the SCE.

Medication Preferences

From the Medication Preferences panel, users can import customized medication response files created in the Pharmacology Editor software.

To access Medication Preferences, click **Medication Preferences** on the Account Profile screen.

The Medication Preferences panel appears.



The Account Profile Screen

To import medication response files, click the **Set** button. The **Select File** dialog box appears. Select the medication response file to be added and click **Open** or **OK**.

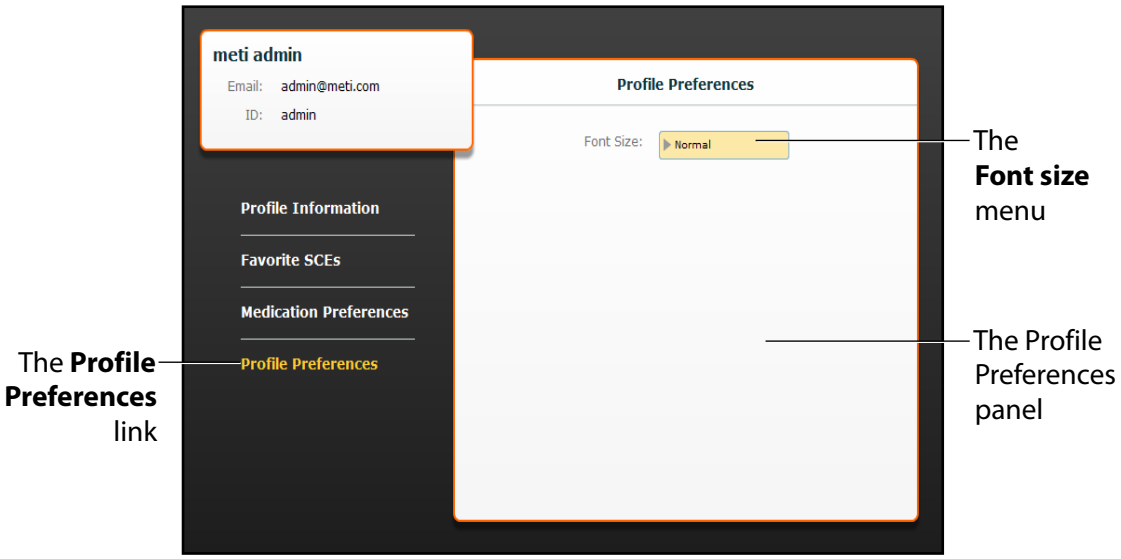
Medication response files can also be removed or exported.

Profile Preferences

From the Profile Preferences panel, users can change the font size used in the software.

To access Profile Preferences, click **Profile Preferences** on the Account Profile screen.

The Profile Preferences panel appears.



The Account Profile Screen

To change the font size, click on the **Font size** selection. The **Font size** drop-down menu appears.

From the **Font size** drop-down menu, select **Normal**, **Small** or **Large**.

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USING THE TOUCHPRO PATIENT MONITOR

The TouchPro Patient Monitor software enables users to view patient physiology.

The software can be used from the Instructor Workstation or on another computer provided the computer has joined the simulator's wireless network.

IMPORTANT: Only two TouchPro software screens can be open at a time.

Accessing the TouchPro Patient Monitor Software

Like the Müse software, the TouchPro Patient Monitor software is compatible with computers that have touch-screen capabilities.

To run the TouchPro Patient Monitor software, the Instructor Workstation must be connected to the simulator's network.

IMPORTANT: An SCE must be running on the Müse software for any physiological data to be displayed on the TouchPro Patient Monitor software. The TouchPro Patient Monitor software can only show one Patient at a time.

To launch TouchPro Patient Monitor from the Instructor Workstation:

1. With the Müse software running, open a new tab in the web browser and go to the **Home** page of the web browser.

   The Müse Start Screen appears.

The Müse Start Screen

2. Select the **TouchPro Patient Monitor** icon.

   When TouchPro Patient Monitor software launches, the simulated patient monitor appears.

The TouchPro Display

NOTE: The capnogram waveform is not displayed on the TouchPro Patient Monitor software from the Instructor Workstation. Capnogram information can be found on the clinical patient monitor if one is connected to the simulator.

Modifying the TouchPro Patient Monitor Display

The layout of the waveforms and numeric data shown on the software can be customized.

The software can show up to six waveforms plus an additional four numeric readouts.

Selecting a Preconfigured Layout

There are six preconfigured CAE Healthcare Layouts:

Labor and Delivery - preconfigured with a waveform and numeric readouts for ECG LEad II and numeric readouts for SpO_2, NIBP, HR, and body temperature.

ICU-Arterial Line Only - preconfigured with waveform and numeric readouts for ECG Lead II, ECG Lead V, ABP, Pleth, and a numeric readout for Body Temperature.

EMS-ED-Telemetry - preconfigured with a waveform and numeric readout for ECG Lead II and numeric readouts for SpO_2, and noninvasive blood pressure (NIBP).

ICU-OR No CVP - preconfigured with waveform and numeric readouts for ECG Lead II, ECG Lead V, ABP, PAP and Pleth, and numeric readouts for NIBP, Thermodilution C.O., Blood Temperature, and Body Temperature.

ICU-OR - preconfigured with waveform and numeric readouts for ECG Lead II, ECG Lead V, ABP, PAP, CVP and Pleth, and numeric readouts for NIBP, Thermodilution C.O., Blood Temperature, and Body Temperature.

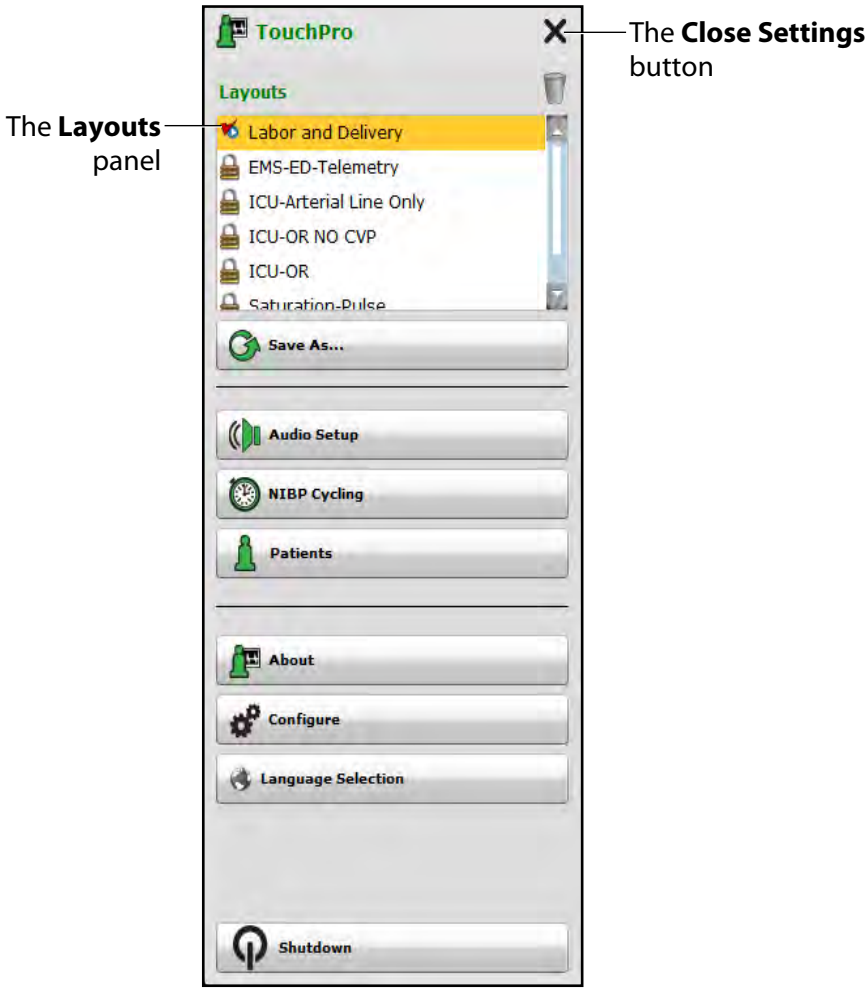
Saturation-Pulse - preconfigured with numeric readouts for SpO_2 and pulse.

To select a preconfigured layout:

1. Click the **Settings** button in the bottom right corner of the display.

The Settings Button

The TouchPro Settings menu appears.



The TouchPro Settings Menu

2. Select a layout from the Layouts panel.
3. Click the **Close Settings** button.

   The Settings menu closes and the selected layout appears.

NOTE: Preconfigured layouts must be enabled in the Müse TouchPro Setup for the currently running SCE to be accessible in the Layouts panel.

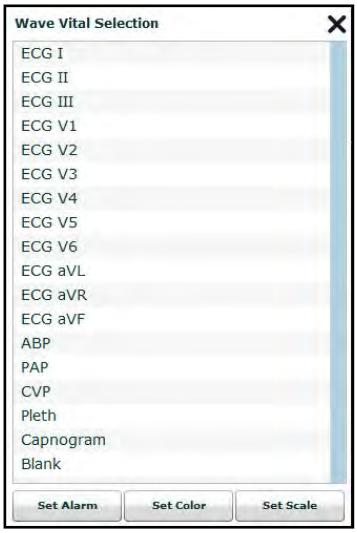
Changing a Waveform or Numeric Display

Waveforms and numeric displays can be changed to suit the user's needs.

To change a waveform or numeric display:

1. Click the waveform or numeric to be changed.

   The Wave Vital Selection menu or the Numeric Vital Selection menu appears, displaying all the available waveforms or numerics.



The Wave Vital Selection Menu

2. Select the desired waveform or numeric.

   The new waveform or numeric is reflected on the screen.

From the **Wave Vital Selection** menu, the alarm, color and scale can be set for the waveform using the **Set Alarm**, **Set Color** and **Set Scale** buttons. From the **Numeric Vital Selection** menu, the color and alarm for the numeric can also be established using the **Set Color** and **Set Alarm** buttons.

Adding a Waveform

The TouchPro software supports up to six waveforms.

To add a waveform:

1. Click the **Settings** button in the bottom right corner of the TouchPro display.

The Settings Button

The Settings menu opens and the **Add Waveform** and **Remove Waveform** buttons appear.

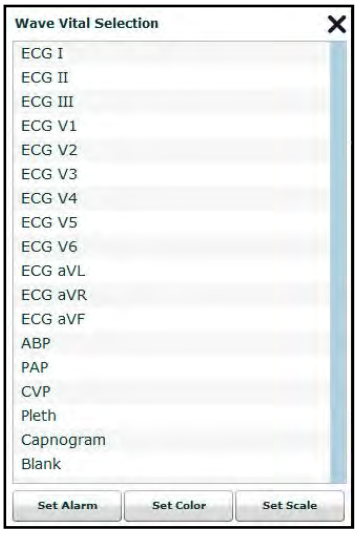
The TouchPro Display

2. Click the **Add Waveform** (+) button in the location above which you want the empty waveform to appear.

   An empty waveform field appears.

3. Click the empty waveform field.

   The Wave Vital Selection menu appears.



The Wave Vital Selection Menu

4. Select the desired waveform from the Wave Vital Selection menu.

   The new waveform is displayed.

Adding a Numeric Display

The TouchPro software contains four numeric display fields. All four numeric display fields are located on one row beneath the waveform displays.

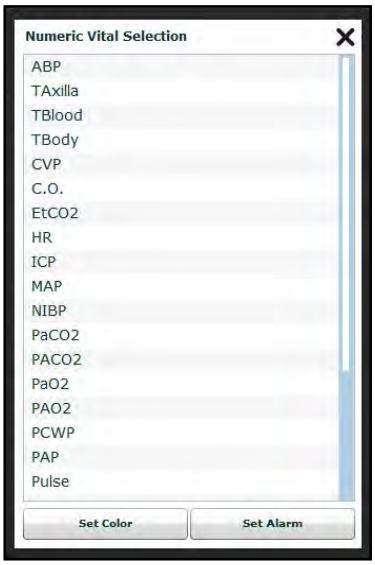
When fewer than four numeric readouts are being displayed, the remaining fields are blank.

To add a numeric to a blank display field:

1. Click a blank numeric display field.

The TouchPro Display

The Numeric Vital Selection menu appears.



The Numeric Vital Selection Menu

2. Select the desired numeric.

   The new numeric vital is displayed.

Moving a Waveform or Numeric Display

Waveforms and numerics can be moved on the screen to suit the user's needs.

To move a waveform or numeric, click the desired waveform or numeric and drag and drop the display to a desired location.

The TouchPro Display

Saving a Layout

Once a layout has been configured, it can be saved and reused.

To save a layout:

1. Ensure the desired waveforms and numerics are in place.
2. Click **Settings**.

   The Settings menu appears.
3. Click **Save As**.

   The Save Layout window appears.
4. In the Save Layout window, in the **Layout Name** field, enter a name for the layout

The Save Layout Window

5. Click **Save.**
6. Click the **Close** button to exit the Settings menu.

Saved layouts can be deleted from the Settings menu by dragging and dropping them in the Trash.

NOTE: When a layout is saved, it is available for use only with the current SCE. To enable the layout for use with any other SCE, enable the layout from the TouchPro Setup panel for the desired SCE.

Sounds

All sounds can be silenced by clicking the **Mute** button in the bottom left corner of the TouchPro display.

The Mute Button

To set up the audio for the TouchPro:

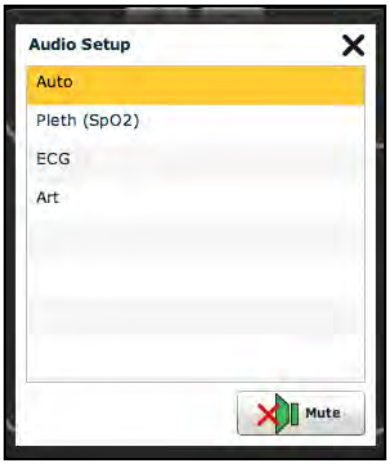
1. Click the **Settings** button in the bottom right corner of the TouchPro display.

The Settings Button

The TouchPro Settings menu appears.

2. From the Settings menu, click **Audio Setup**.

The Audio Setup window appears.



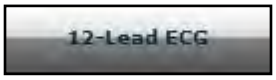
The Audio Setup Window

From the Audio Setup window, select a waveform to set it as the pulse sound. Once a waveform is selected, the Audio Setup window automatically closes.

Clicking the **Mute** button from the Audio Setup window mutes all alarms. Click the **Mute** button again to return the alarms to their original state.

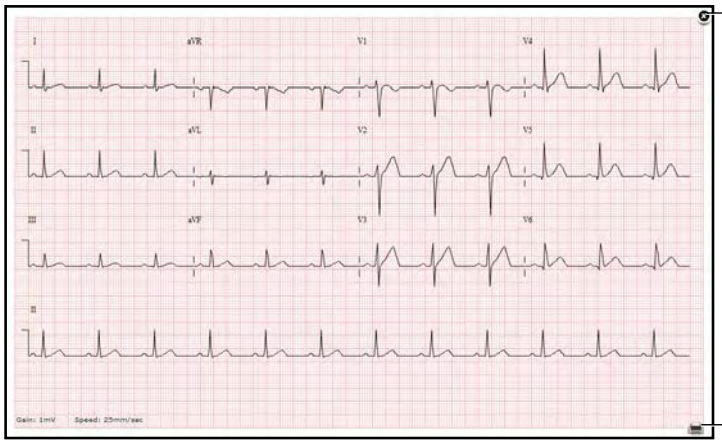
12-Lead ECG

To view a 12-lead ECG report, click the **12-Lead ECG** button at the bottom of the TouchPro screen.



The 12-Lead ECG Button

The report appears.



A 12-Lead ECG Report

The report can be printed or saved by clicking the **Print** button in the bottom right corner of the 12-lead ECG report.

To close the report, click the **Close** button.

IMPORTANT: Prior to saving the report as a PDF or printing to a network printer, the print presets must be adjusted. The page orientation must be set to Landscape and the margins must be set to .25 inches on all sides. These settings vary in location depending on the operating system (i.e., Macintosh or Windows).

To save the report to a PDF file on a Macintosh Instructor Workstation:

1. From the 12-lead ECG report screen, click the **Print** button located in the bottom right corner of the 12-lead ECG report.

   The Report Title window appears.

The 12-Lead Report Title Window

2. Enter a title for the 12-lead report.
3. Click **Print**.

   The Page Setup window appears.

4. On Page Setup Window, click **OK**.

   The Print window appears.

5. From the Print window, click the **PDF** drop-down menu in the lower left corner.
6. From the drop-down menu, select the S**ave as PDF** option.

   The Save window appears.

7. In the Title field, enter the 12-lead report title.
8. Click **Save.**

   The report saves as a PDF on the Macintosh Instructor Workstation.

To save the report to a PDF file on a Windows Instructor Workstation:

1. From the 12-lead ECG report screen, click the **Print** button located in the bottom right corner of the 12-lead ECG report.

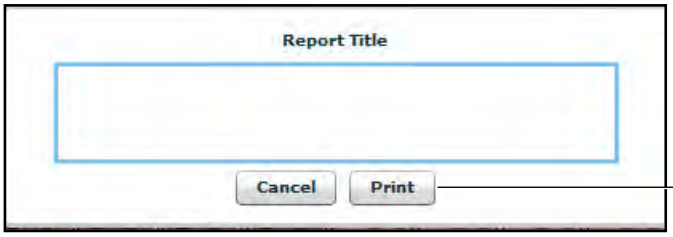
   The Print dialog box appears.

2. From the drop-down menu, select Microsoft XPS Document Writer.

   The report saves on the Windows Instructor Workstation.

To print a report:

1. From the 12-lead ECG report screen, click the **Print** button located in the bottom right corner of the 12-lead ECG report.



The 12-Lead Report Title Window

2. Enter a title for the 12-lead report.

   The Print window appears.

3. From the Printer drop-down menu, select the appropriate network printer.

   NOTE: A network printer must be configured in order to appear as an option.

4. From the Print window, click the **Print** button.

   The report prints to the designated network printer.

NIBP Cycling and Manual NIBP

When non-invasive blood pressure (NIBP) is displayed, the patient's NIBP can be updated at specified intervals using NIBP Cycling, or the current NIBP can be displayed immediately using the **Manual NIBP** button.

NIBP Cycling can be used to set the patient's NIBP to be updated at regular intervals.

To set NIBP cycling:

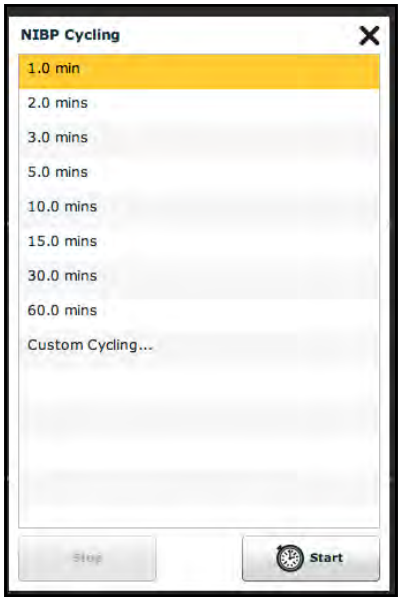
1. Click the **Settings** button in the bottom right corner of the TouchPro display.

The Settings Button

   The TouchPro Settings menu appears.

2. From the Settings menu, click **NIBP Cycling**.

   The NIBP Cycling window appears.



The NIBP Cycling Window

3. From the NIBP Cycling window, select the desired interval for the cycling.
4. Click **Start**.

Custom cycling is also available.

To display the patient's current NIBP, click the **Manual NIBP** button.

The TouchPro Display

The current NIBP is displayed.

NOTE: Manual NIBP can be used at any time during cycling. However, this turns off auto-cycling.

Patients

To view the available Patients:

1. Click the **Settings** button in the bottom right corner of the TouchPro display.

The Settings Button

The TouchPro Settings menu appears.

2. From the Settings menu, click the **Patients** button.

The current Patients window appears.

The Patients Window

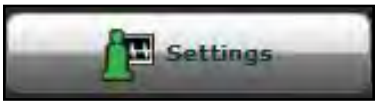
NOTE: When connected to the simulator, the TouchPro only displays the active Patient.

Configuring the TouchPro Software

The background color and alarm suspension time can be set from the TouchPro Configure panel.

To access the Configure panel:

1. Click the **Settings** button in the bottom, right corner of the TouchPro screen.



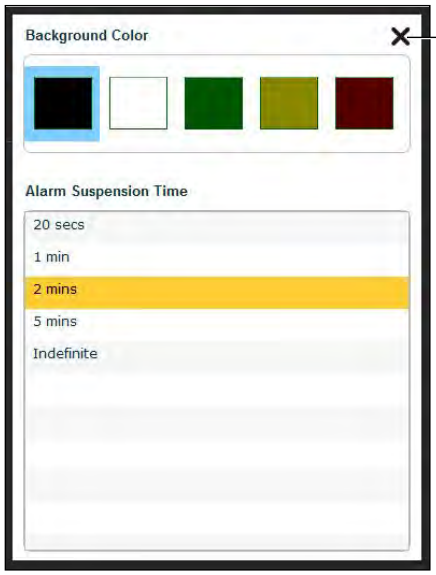
The Settings Button

   The Settings menu appears.

2. From the Settings menu, click the **Configure** button.

   The Configure window appears.

3. From the Configure window, set the background color and alarm suspension time.



The Configure Window

4. Click the **Exit** button to exit the Configure window when finished.

Changing the TouchPro Language

To change the language of the TouchPro software:

1. Click the **Settings** button in the bottom, right corner of the TouchPro screen.

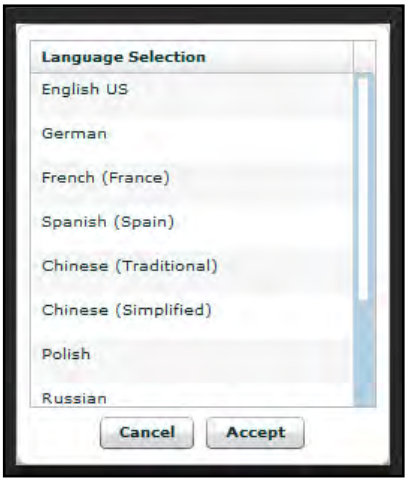
The Settings Button

   The Settings menu appears.

2. From the Settings menu, click the **Language Selection** button.

   The Language Selection window appears.

3. From the Language Selection window, select a language.



The Language Selection Window

4. Click **Accept**.

   The TouchPro software changes to the selected language.

Exiting the TouchPro Software

To exit TouchPro:

1. Click the **Settings** button from the bottom, right corner of the TouchPro screen.

The Settings Button

   The Settings menu appears.

2. From the Settings menu, click **Shutdown**. A warning box appears asking if you want to exit.
3. Click **Shutdown**.

   TouchPro shuts down and the Müse Start Screen appears.

USING THE TOUCHPRO CTG MONITOR SOFTWARE

The TouchPro CTG Monitor software enables users to monitor fetal heart rate and uterine contractions.

The software can be used from the Instructor Workstation or on another computer provided the computer has joined the simulator's wireless network.

The parameters displayed on the TouchPro CTG Monitor are determined by the TouchPro CTG Configuration settings selected for the running SCE from the Müse Run screen. From the TouchPro CTG Configuration settings, users can select which probes are connected to the patient, modify the signal status for fetal heart rate and uterine activity and make changes to the TouchPro CTG Monitor display.

Accessing the TouchPro CTG Software

Like the Müse software, the TouchPro CTG Monitor software is compatible with computers that have touch-screen capabilities.

To launch the TouchPro CTG Monitor software from the Instructor Workstation:

1. With the Müse software running, open a new tab in the web browser and go to the **Home** page of the web browser.

   The Müse Start Screen appears.

The Müse Start Screen

2. Select the **TouchPro CTG** icon.

The TouchPro CTG Monitor software opens, displaying simulated TouchPro CTG monitor readings and a simulated CTG paper strip.

The CTG Monitor

Configuring CTG Alarms

There are three factors that determine CTG alarm behavior: alarm thresholds, alarm suspension time and audio settings.

Setting CTG Alarm Thresholds

The CTG alarm thresholds define the acceptable ranges for the various parameters shown on the CTG monitor. When a parameter falls outside the acceptable range, the CTG alarm sounds.

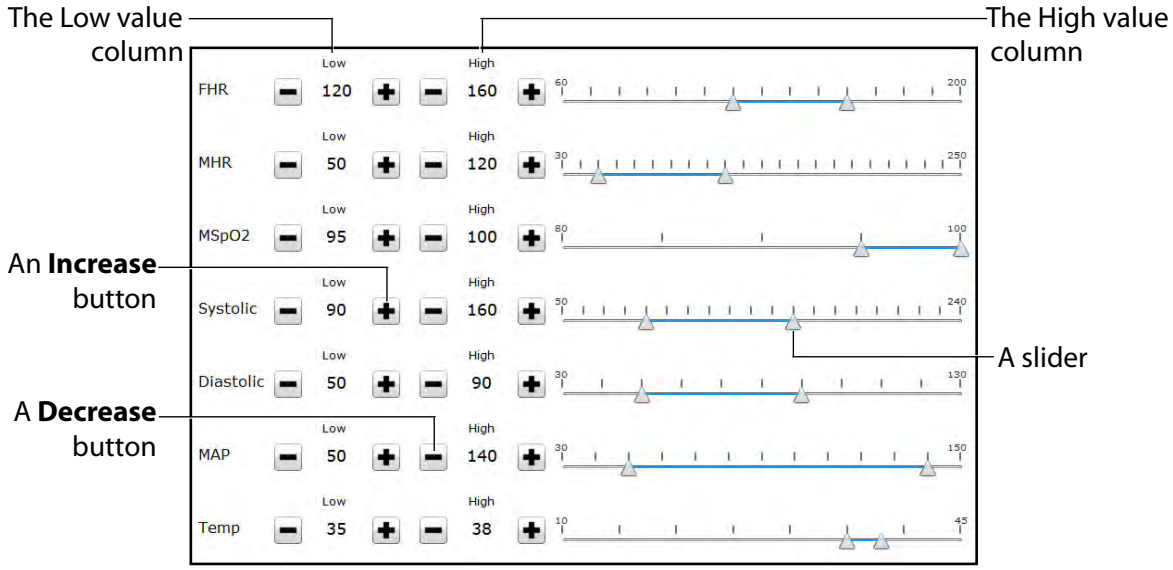
NOTE: The fetal heart rate (FHR) alarm only sounds when FHR has been below the acceptable range for at least 30 of the last 60 seconds or above the acceptable range for at least 150 of the last 300 seconds. The alarm also sounds when a FHR probe is connected but no FHR data has been received for 90 of the last 180 seconds.

To set CTG alarm thresholds:

1. From the CTG Monitor, click the **Alarm** button in the lower-left corner of the CTG display.

The Alarm Button

The Alarm Thresholds window appears.



The Alarm Thresholds Window

2. From the Alarm Thresholds window, adjust the desired parameters using the **Increase** and **Decrease** buttons or the sliders next to parameters.

   Any parameter value that falls below the Low value or above the High value causes the CTG alarm to sound.

3. Click anywhere outside the Alarm Thresholds window to close the window and return to viewing the CTG Monitor.

Setting CTG Alarm Suspension Time

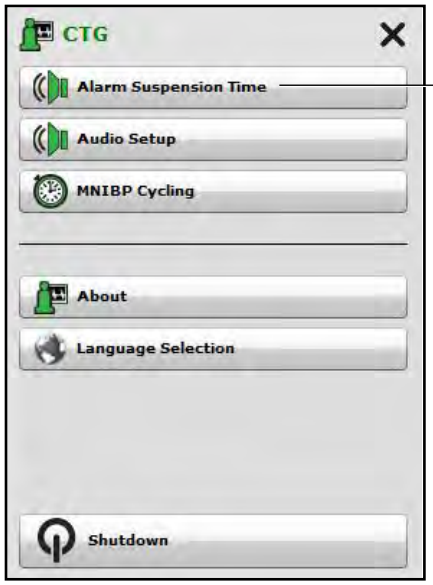
The alarm suspension time determines how long an alarm stays silent after it is manually muted using the **Mute** button in the lower left corner of the CTG display.

To adjust the alarm suspension time:

1. Click the **Settings** button in the bottom right corner of the screen.

The Settings Button

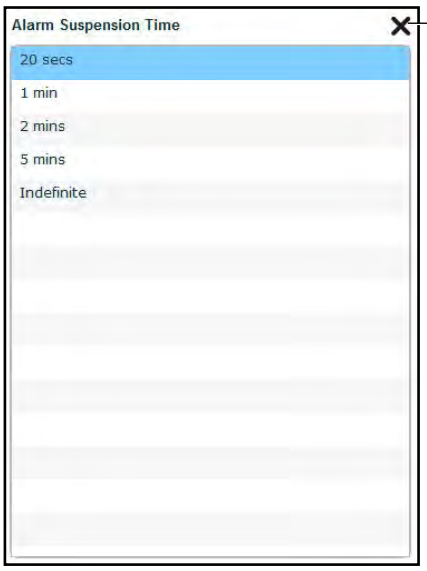
The CTG Monitor Settings menu appears.



The CTG Monitor Settings Menu

2. Click the **Alarm Suspension Time** button.

The Alarm Suspension Time window appears.



The Alarm Suspension Time Window

3. Select the desired suspension time.
4. Click the **Close** button.

   The window closes and the selected alarm suspension time is applied.

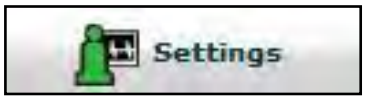
NOTE: The alarm suspension time does NOT apply when all alarms are muted using the Audio Setup window or the **Mute** button in the bottom left corner of the CTG monitor. When all alarms are muted using these methods, they remain muted until the user manually un-mutes them using the Audio Setup window or by pressing the **Mute** button in the bottom left corner of the CTG monitor a second time.

Adjusting Audio Settings

The CTG alarm sound can be changed or all alarms can be muted from the **Audio Setup** menu.

To change CTG audio settings:

1. Click the **Settings** button in the bottom right corner of the screen.



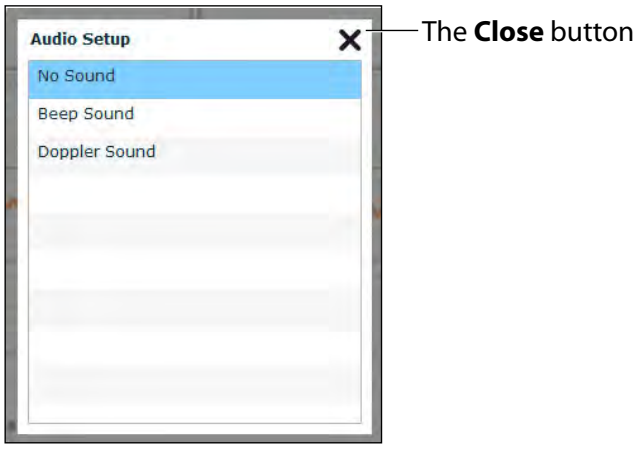
The Settings Button

The CTG Monitor Settings menu appears.

The CTG Monitor Settings Menu

2. Click the **Audio Setup** button.

   The Audio Setup window appears.



The Audio Setup Window

3. Select the desired alarm sound.
4. Click the **Close** button.

   The window closes and the selected alarm sound is applied.

Muting CTG Alarms

All CTG alarms can be muted by clicking the **Mute** button in the bottom left corner of the CTG Monitor.

The Mute Button

When all alarms are muted, they remain muted until the user manually un-mutes them by clicking the **Mute** button again.

MNIBP Cycling and Manual MNIBP

When maternal non-invasive blood pressure (MNIBP) is displayed, the MNIBP can be updated at specified intervals using MNIBP Cycling, or the current MNIBP can be displayed immediately using the **Manual MNIBP** button.

To set MNIBP cycling to update the MNIBP at regular intervals:

1. Click the **Settings** button in the bottom right corner of the CTG Monitor display.

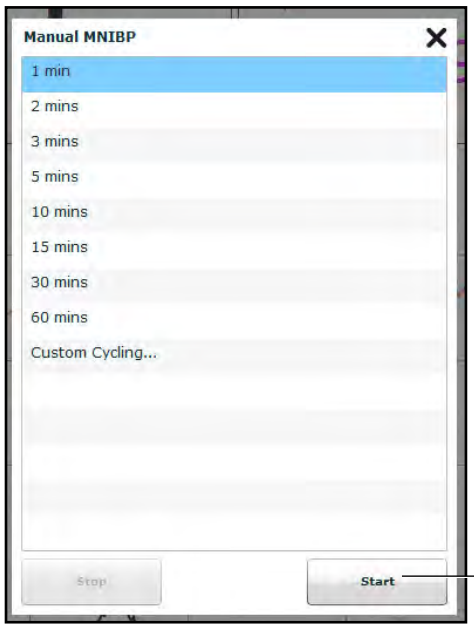
The Settings Button

The CTG Monitor Settings menu appears.

The CTG Monitor Settings Menu

2. From the Settings menu, click **MNIBP Cycling**.

   The MNIBP Cycling window appears.



The Manual NIBP Window

3. From the MNIBP Cycling window, select the desired interval for the cycling.
4. Click **Start**.

The MNIBP Cycling window closes and the selected cycling interval is applied.

Custom cycling is also available by selecting the **Custom Cycling** option from the MNIBP Cycling window.

To display the patient's current MNIBP, click the **Manual MNIBP** button.

The CTG Monitor Display

The current MNIBP is displayed.

NOTE: Manual MNIBP can be used at any time during cycling. However, this turns off auto-cycling.

Resetting Tocography Noise

The tocography information displayed on the CTG Monitor can be adjusted to represent TOCO probe error. This is accomplished in Müse using the **TOCO Offset** parameter, accessed from the CTG Configuration Settings.

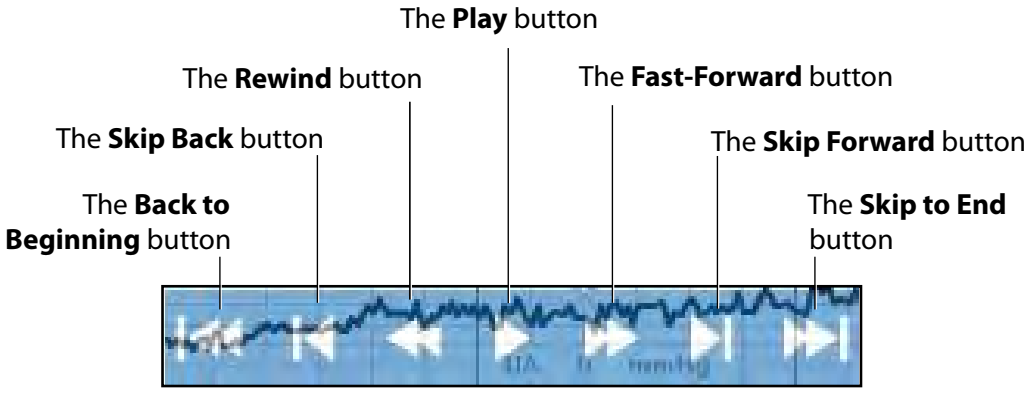
To eliminate probe error and restore **TOCO Offset** to the default zero value from the CTG Monitor display, click the **TOCO Zero** button in the lower-left corner of the CTG display.

Viewing the CTG Strip

The lower portion of the CTG Monitor display shows a CTG strip. This strip represents the paper strip that would be generated by a real CTG monitor.

The CTG Monitor Display

To view CTG strip history, use the CTG strip navigation buttons located in the lower left corner of the CTG strip.



The CTG Strip Navigation Buttons

The **Back to Beginning** button skips back to the very beginning of the strip.

The **Skip Back** button skips back one screen.

The **Rewind** button moves the strip steadily backward so the user can view the strip as it moves along the monitor.

The **Play** button causes the strip to move along the monitor at a normal speed, beginning from the currently displayed portion of the strip.

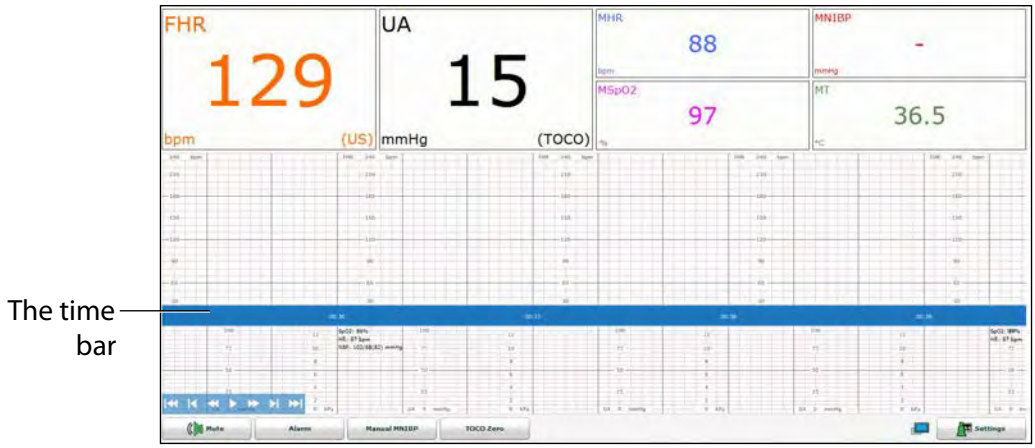
NOTE: The **Play** button becomes a **Pause** button when the strip is running.

The **Fast-Forward** button moves the strip steadily forward so the user can view the strip as it moves along the monitor.

The **Skip Forward** button skips forward one screen.

The **Skip to End** button skips to the end of the strip.

When the CTG strip data displayed on the screen is not current (e.g., the **Rewind** button has been used), the time bar turns blue.



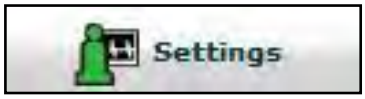
The CTG Monitor Display

When the strip returns to showing current data, the time bar turns white again.

Changing the CTG Monitor Language

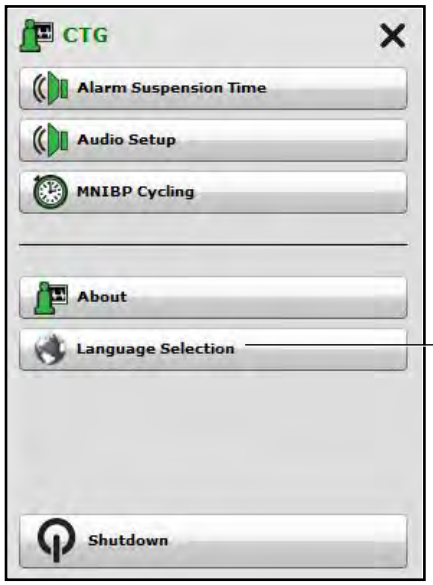
To change the language of the CTG Monitor:

1. Click the **Settings** button from the bottom, right corner of the CTG Monitor.



The Settings Button

The CTG Monitor Settings menu appears.

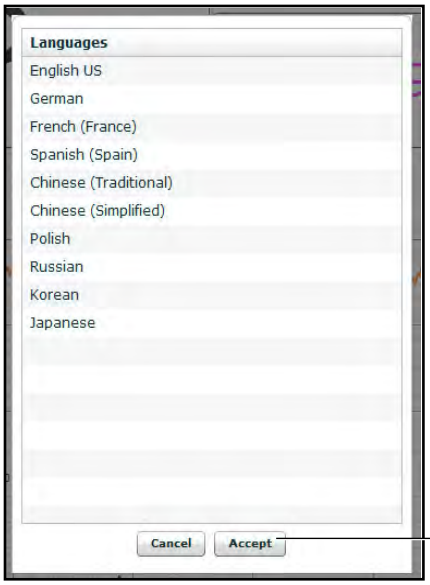


The **Language Selection** button

The CTG Monitor Settings Menu

2. From the Settings menu, click the **Language Selection** button.

The Language Selection window appears.



The Language Selection Window

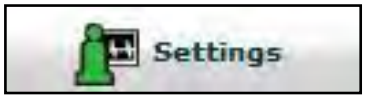
3. From the Language Selection window, select a language.
4. Click **Accept**.

   The TouchPro CTG Monitor software changes to the selected language.

Exiting the CTG Monitor

To exit the CTG monitor:

1. Click the **Settings** button from the bottom, right corner of the CTG Monitor.



The Settings Button

The CTG Monitor Settings menu appears.

The CTG Monitor Settings Menu

2. From the Settings menu, click **Shutdown**. A warning box appears asking if you want to exit.
3. Click **Shutdown**.

   The CTG Monitor shuts down and the Müse Start Screen appears.

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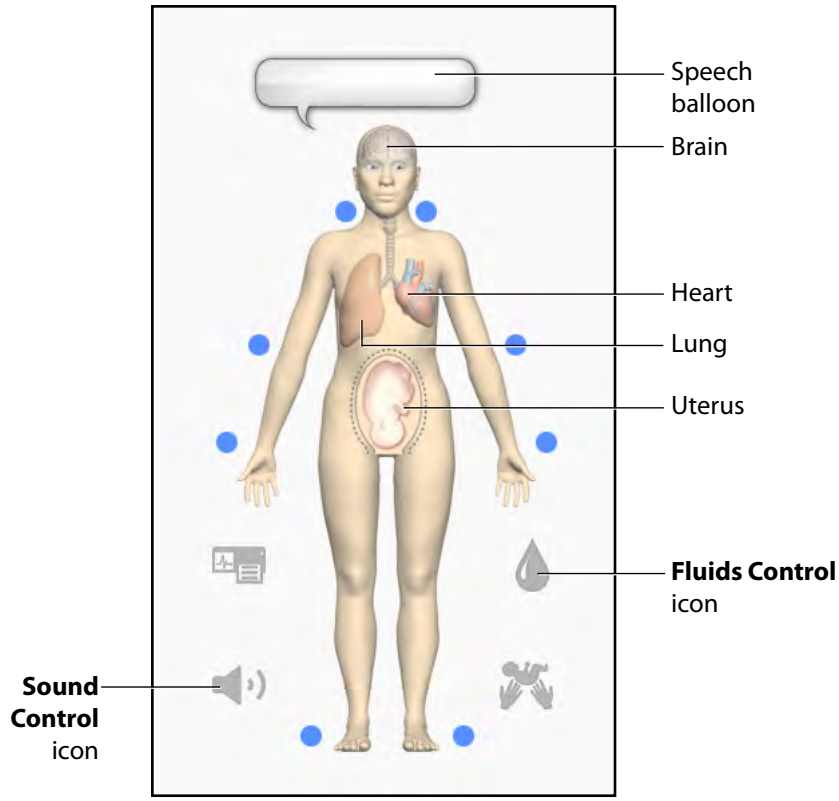
USING LUCINA

Once Lucina has been set up, the software has been loaded and an SCE started, the simulator is ready for learner interventions. From the Run screen, the features of Lucina can be accessed. They are broken down into the following categories: Fetal and Labor, Neurological, Respiratory, Cardiovascular, Fluids and Sounds.



The Physiological Views

To access each view, click the appropriate organ, icon or button.

- For Fetal and Labor, click the uterus.
- For Neurological, click the brain.
- For Respiratory, click the lung.
- For Cardiovascular, click the heart.
- For Fluids, click the **Fluids Control** icon.
- For Sounds, click the **Sound Control** icon.

Neurological Features

Lucina can simulate a variety of neurological clinical indicators, such as seizures and reactive eyes. Neurological features are controlled from the Neurological view in Müse.

To access the Neurological view, from the **Run** screen, click the brain on the homunculus. The Neurological parameters appear.

The Neurological View

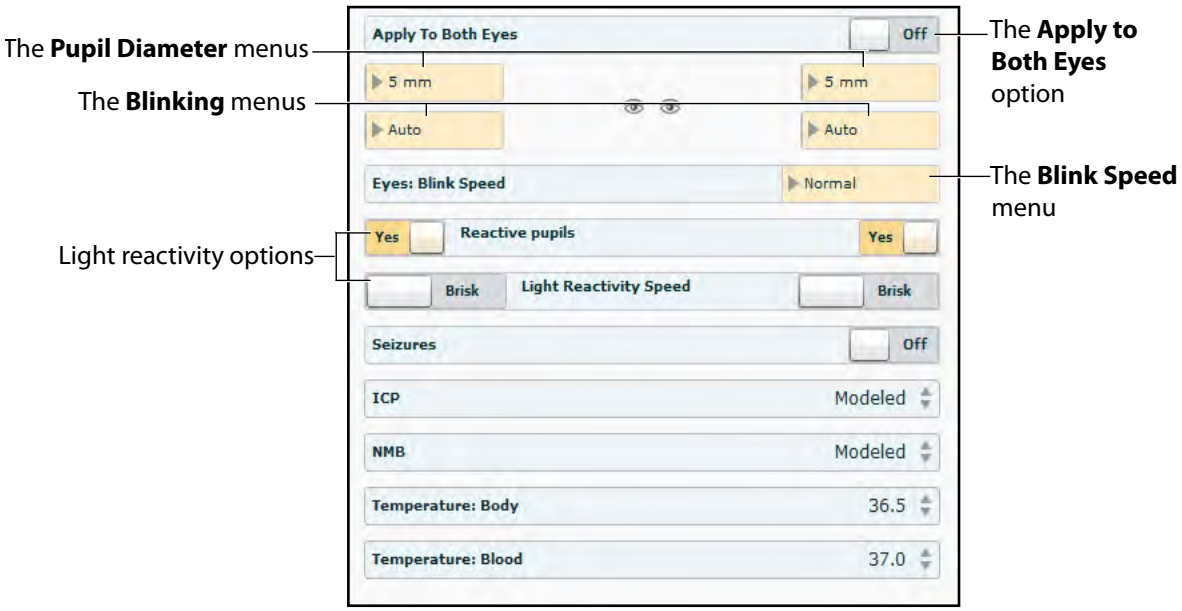
Neurological Features			
Anatomy, Physiology and Clinical Signs	**Description**	**Software Control**	**Manual Control**
Eyes	Each eye has reactive pupils and functional eyelids that blink and close.	The response to clinical intervention must be controlled by the instructor. VIEW: **Neurological** PARAMETER(S): **Eye Controls**	None required.
Seizures	The mannequin can simulate seizures with rhythmic movement of the arms and rapid blinking.	The response to clinical intervention must be controlled by the instructor. VIEW: **Neurological** PARAMETER(S): **Seizures**	None required.
Intracranial Pressure	Intracranial pressure value can be set and displayed on the Patient Status Display or the TouchPro Patient Monitor.	The response to clinical intervention must be controlled by the instructor. VIEW: **Neurological** PARAMETER(S): **ICP**	None required.
Neuromuscular Blockade	By default, neuromuscular blockade is modeled based on patient physiology. The modeled neuromuscular blockade value can be overridden by manually selecting a value.	If the NMB value is set greater than 30%, the eyes will automatically close. VIEW: **Neurological** PARAMETER(S): **NMB**	None required.

Neurological Features			
Anatomy, Physiology and Clinical Signs	**Description**	**Software Control**	**Manual Control**
Temperature	Body and blood temperature can be set using the temperature parameters. Body and blood temperature can be displayed on the Patient Status Display.	The response to clinical intervention must be controlled by the instructor. VIEW: **Neurological** PARAMETER(S): **Temperature: Body, Temperature: Blood**	None required.

Eyes

Each eye has reactive pupils and eyelids that blink and close.

The settings for pupil diameter, light reactivity and blinking are located on the Neurological view.



The Neurological View

Both eyes can be controlled together by setting the **Apply To Both Eyes** option to **On**. When this option is selected, any changes made to one eye are also automatically applied to the other eye.

Currently, there are three pupil options that are used to control the baseline diameter of the pupils in both eyes: Pinpoint, Blown, or a Fixed Pupil Size from 3 mm to 8 mm.

The simulator's eyes can be set to **Blinking** or **Closed**. The default setting is **Auto**. With this setting, the eyes are either blinking or closed based on the patient's physiology. When the simulator's eyelids are closed, the eyes can still be manually opened for clinical inspection.

Additionally, eyelids can be programmed in scenarios to open and close spontaneously or can be fixed in the closed position.

Blinking frequency is controlled by the **Eyes: Blink Speed** menu and can be set to one of four speeds: **Normal** (the default), **Slow**, **Fast** and **Rapid**.

Setting the **Reactive pupils** option to **Yes** causes the pupils to re-size from the baseline in response to changes in light. **Light Reactivity Speed** can be set to **Sluggish** or **Brisk**.

Seizures

Lucina simulates seizure activity when the feature is activated in Müse. To activate seizures, from the Neurological view, set the **Seizures** option to **On**. To deactivate seizures, set the **Seizures** option to **Off**.

NOTE: If eyes have been set to **Closed** or if neuromuscular blockage is set to greater than 30%, the eyes will remain closed when seizures are activated.

For more information on the ICP, NMB, and Temperature parameters, see the *Müse Parameter Descriptions* section of this user guide.

Respiratory Features

Lucina has an anatomically realistic upper airway that supports endotracheal tube placement, right mainstem intubation, laryngoscopy, airway adjuncts, positive pressure ventilation, mechanical ventilation and a variety of other airway management techniques. The simulator also demonstrates exhalation and chest excursion.

Respiratory features are controlled from the Respiratory view in Müse. To access the Respiratory view, from the **Run** screen, click the lung on the human form. The basic Respiratory parameters appear. To view additional parameters, click the **Basic/Additional** switch.

The **Basic/Additional** switch

The Respiratory View

Respiratory Features			
Anatomy, Physiology and Clinical Signs	**Description**	**Software Control**	**Manual Control**
Airway Management and Ventilation	Alveolar and arterial gas concentrations appropriately reflect the efficacy of ventilation and oxygen administration.	Oxygen administration input by the instructor. VIEW: **Respiratory** PARAMETER(S): **Fraction of Inspired O_2**	None required.
Arterial Blood Gases	PaO_2, $PaCO_2$ and pH are continuously calculated and displayed when selected for the Patient Status Display	None required, but adjustable VIEW: **Respiratory** PARAMETER(S): **O_2 Consumption, CO_2 Production Factor**	None required.
Articulated Mandible	Allows for jaw thrust when sensors in the lower jaw are grasped in a clinically appropriate manner. This action is recorded in the events log.	None required.	None required.
Bronchial Occlusion	Completely obstructs right and/or left mainstem bronchi, simulating a lower airway obstruction (e.g., mucus plug). This yields an inability to ventilate the lungs.	VIEW: **Respiratory** PARAMETER(S): **Bronchial Occlusion**	None required.
Chest Excursion	Synchronized with ventilation (spontaneous or mechanical). Excursion depth proportional to tidal volume.	None required.	None required.

Respiratory Features			
Anatomy, Physiology and Clinical Signs	**Description**	**Software Control**	**Manual Control**
Exhalation	The simulator exhales air, exhibiting synchronized chest movement.	None required.	None required.
Pulse Oximetry	Oxyhemoglobin saturation (SpO_2) automatically correlates with the oxygen concentration in the lungs and the intrapulmonary shunt fraction.	None required, but adjustable VIEW: **Respiratory** PARAMETER(S): **SpO_2, Shunt Fraction**	None required.
Realistic Upper Airway	Allows direct laryngoscopy, oral intubation and use of specialty airway devices. Senses if ET tube is correctly inserted.	None required.	None required.
Spontaneous, Self-Regulating Breathing	Normal tidal breathing and pathophysiological conditions such as atelectasis, pneumothorax, asthma and COPD.	None required, but adjustable. VIEW: **Respiratory** PARAMETER(S): **Respiratory Rate, Respiratory Rate Factor, etc.**	None required.
Symmetric and Asymmetric Lung Ventilation	Tracheal, pathophysiologic conditions such as pneumothorax.	None required, but adjustable. VIEW: **Respiratory** PARAMETER(S): **Chest Wall Compliance Factor**	None required.
Trachea, Left and Right Mainstem Bronchi	Tracheal intubation results in bilateral chest excursion and breath sounds. Endobronchial intubation results in unilateral chest excursion and breath sounds.	None required.	None required.

Respiratory Features			
Anatomy, Physiology and Clinical Signs	**Description**	**Software Control**	**Manual Control**
Venous Blood Gases	PvO_2 and $PvCO_2$ are continuously calculated and displayed when selected for the Patient Status Display	None required, but adjustable VIEW: **Respiratory** PARAMETER(S): **$PACO_2$ Set-point, PET CO_2 to $PaCO_2$ Factor**	None required.

Realistic Upper Airway

The upper airway of Lucina is designed to allow for intubation and laryngoscopy. Oral intubation can be performed using a variety of airway devices, including LMAs, endotracheal tubes and oropharyngeal airways.

Sensors detect right mainstem intubation, and the action is recorded in the Events log and in the Simulation Session. In addition, the simulator exhibits a right unilateral chest rise, and the appropriate physiological changes result.

NOTE: The first breath must be delivered in order for the sensors to detect or record right mainstem intubation.

IMPORTANT: Airways can be damaged by improper insertion of an airway adjunct (e.g. endotracheal tube). To protect the airway, lubricate the adjunct prior to insertion using the cottonseed oil spray provided.

Use ONLY the provided cottonseed oil to lubricate the adjunct. NEVER use a water-based lubricant because of resulting residue damage.

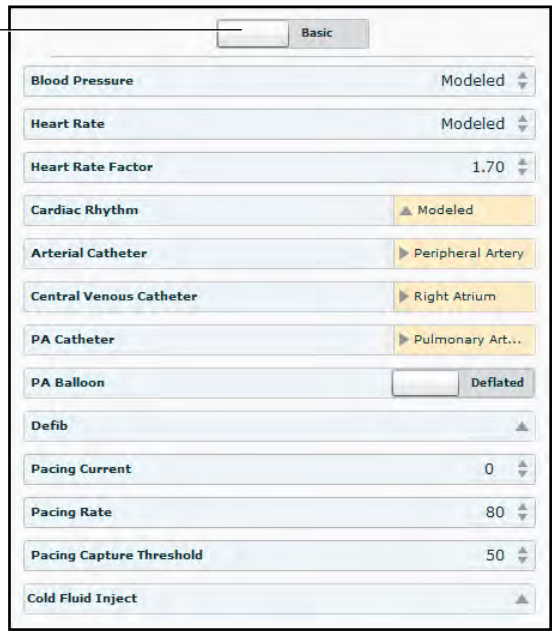
For supported airway adjunct and clinical supply sizes, see *Recommended Clinical Supply Sizes*.

Cardiovascular Features

Lucina produces realistic heart sounds and a wide range of pathophysiologic conditions synchronized to the QRS complex of the ECG and audible with a standard stethoscope.

Cardiovascular features are controlled from the Cardiovascular view in Müse. To access the Cardiovascular view, from the **Run** screen, click the heart on the human form. The basic Cardiovascular parameters appear. To view additional parameters, click the **Basic/Additional** switch.

The **Basic/Additional** switch



The Cardiovascular View

Cardiovascular Features			
Anatomy, Physiology and Clinical Signs	**Description**	**Software Control**	**Manual Control**
3- or 4-Lead ECG	ECG waveforms can be viewed on a standard monitor and/or on the Patient Status Display. Normal and abnormal cardiac rhythms are linked to patient physiology (e.g. blood pressure, cardiac output).	None required; specific rhythms can be selected. VIEW: **Cardiovascular** PARAMETER(S): **Cardiac Rhythm**	ECG monitor may be used.
Baroreceptor Reflex	Cardiovascular system automatically compensates for changing hemodynamic conditions.	None required, but adjustable. VIEW: **Cardiovascular** PARAMETER(S): **Baroreceptor Maximum Pressure, Baroreceptor Minimum Pressure**	None required.
Cardiac Pacing	A transthoracic cardiac pacemaker can be used with Lucina. Pacing results in appropriate physiological changes in blood pressure and cardiac output.	The instructor can set the level at which electrical capture and mechanical capture occur. VIEW: **Cardiovascular** PARAMETER(S): **Pacing Current, Pacing Rate, Pacing Capture Threshold**	See *Pacing* on the following pages for cardiac pacing disk locations and instructions.
Cardiac Rhythms	The various cardiac rhythms can be selected.	The response to clinical intervention must be controlled by the instructor. VIEW: **Cardiovascular** PARAMETER(S): **Cardiac Rhythm**	None required.

Cardiovascular Features			
Anatomy, Physiology and Clinical Signs	**Description**	**Software Control**	**Manual Control**
Chest Compression	Effective chest compression results in artificial circulation, cardiac output, central and peripheral blood pressures, palpable pulses, and CO_2 return. The Müse CPR Monitor displays key compression parameters in real time.	None required, but adjustable. VIEW: **Cardiovascular** PARAMETER(S): **Chest Compression Efficacy, CPR Monitor**	Apply chest compressions.
Circulation	Normal and abnormal circulation (e.g. hypovolemia, hypervolemia and right/left heart failure) can be adjusted.	None required, but adjustable. VIEW: **Cardiovascular** PARAMETER(S): **Systemic Vascular Resistance Factor**	None required.
Defibrillation	Lucina supports operation with a variety of manual and automatic external defibrillators.	Defibrillation can be simulated by the instructor. VIEW: **Cardiovascular** PARAMETER(S): **Defib**	See *Defibrillation* on the following pages for defibrillation disk locations and instructions.
Invasive Hemodynamic Monitoring	Various hemodynamic physiological indicators are registered and can be monitored.	None required, but adjustable. VIEW: **Cardiovascular** PARAMETER(S): **Arterial Catheter, Central Venous Catheter, PA Catheter**	None required.
Manual Blood Pressure	Systemic blood pressure can be measured using the return-to-flow technique. Korotkoff sounds can also be auscultated.	None required.	See *Blood Pressure* for information on modified blood pressure cuff.

Cardiovascular Features			
Anatomy, Physiology and Clinical Signs	**Description**	**Software Control**	**Manual Control**
Myocardial Ischemia	Myocardial oxygen supply and demand automatically influence the cardiac rhythm, yielding response to hypoxemia.	None required, but adjustable. VIEW: **Cardiovascular** PARAMETER(S): **Ischemic Index Sensitivity, Ischemic Index Averaging**	None required.
Palpable Pulses	Carotid, brachial, radial and dorsalis pedis pulses can be palpated bilaterally and are synchronous with the cardiac cycle. A pulse deficit automatically occurs if the systolic arterial blood pressure falls below specified thresholds. The intensity of the pulse reflects current physiology or can be set to absent, weak, normal or bounding Note that carotid pulses do not have intensity levels.	None required, but adjustable. VIEW: **Cardiovascular** PARAMETER(S): **Pulse Locations, Pulse Deficit, Pulse Intensity**	None required.

Pulses

Eight pulse locations are activated, through sensors, by touch:

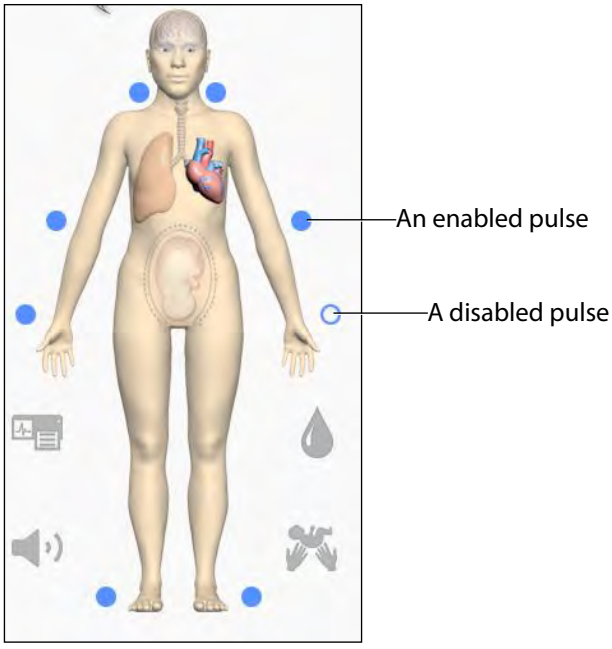
- Carotid (2)
- Brachial (2)
- Radial (2)
- Dorsalis Pedis (2)

Pulse palpation is recorded in the Events Log.

Pulses are visible and can be controlled from any physiological view. All pulses, unless altered by an SCE, are palpable by default. When a pulse is palpated, the event is recorded on the Events Log and the Simulation Session for later review.

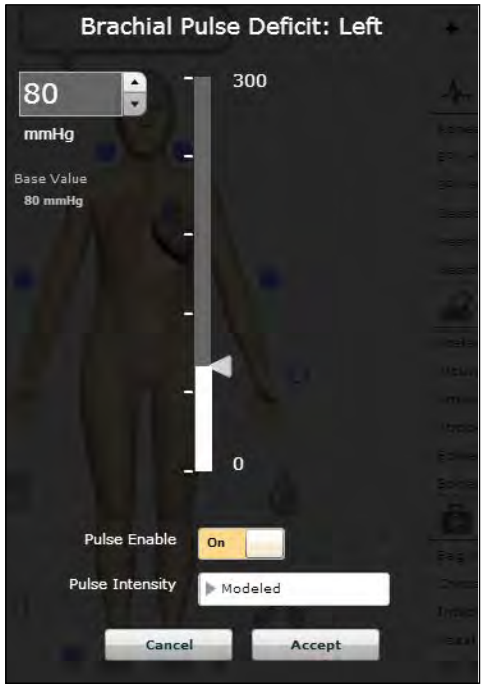
To disable a pulse:

1. Click the pulse location on the human form.



The Pulses

The menu for the selected pulse appears.



A Pulse Menu

2. Click the **Pulse Enable** switch to turn the pulse **Off**.
3. Click **Accept**.

   The pulse is disabled.

   The pulse can be enabled again by accessing the pulse menu and clicking the **Pulse Enable** switch to turn the pulse **On**.

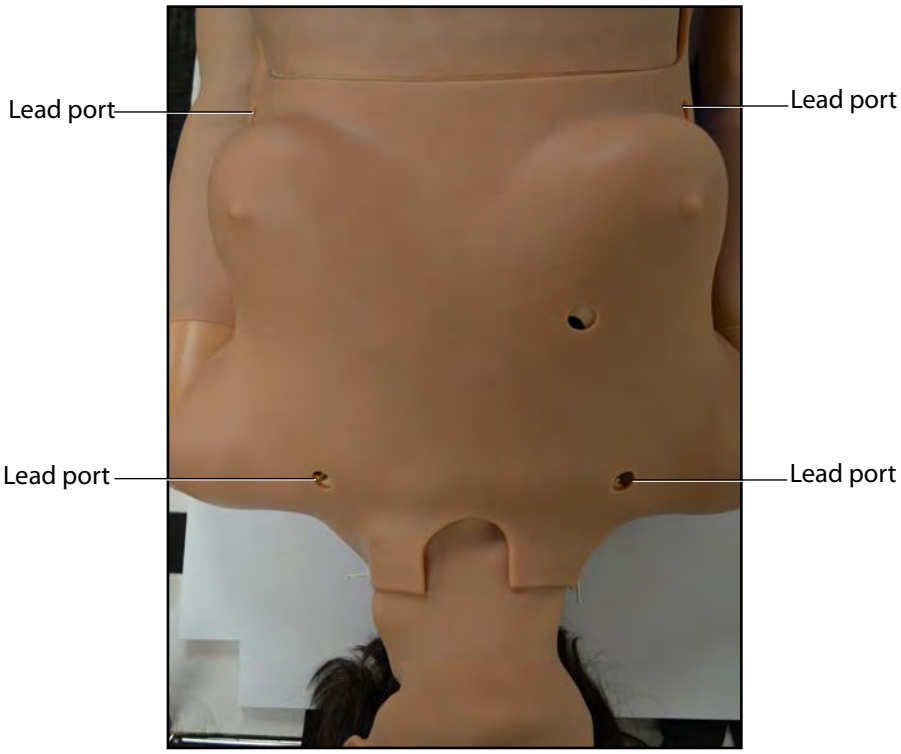
A pulse deficit occurs when the systolic arterial blood pressure falls below the default threshold indicated in the table below.

Palpable Pulse Thresholds			
Carotid	60 mmHg	Radial	90 mmHg
Brachial	80 mmHg	Dorsalis Pedis	80 mmHg

Pulse deficit and intensity can be modified from the pulse menu for each pulse.

4-Lead ECG

A 3-lead or 4-lead ECG is emitted from the appropriate positions for display on a standard monitor. A contact is available on the maternal mannequin's chest for each of four cables.



The 4-Lead ECG Ports

The simulator generates a normal sinus ECG, as well as a broad range of abnormalities such as myocardial ischemia, sinus tachycardia and bradycardia, ventricular fibrillation and asystole. The hemodynamic response to the arrhythmias is physiologically correct. Myocardial oxygen balance and cardiac ischemia automatically influence the cardiac rhythm resulting in a realistic and automatic response of the rhythm to hypoxemia. The degree of influence can be controlled or completely overridden by the instructor.

To use the ECG lead ports, locate the posts provided in the accessory kit and screw each post onto a lead port.

NOTE: The inferior locations have an extender permanently in place.

Manual Blood Pressure

Blood pressure can be taken manually on either arm.

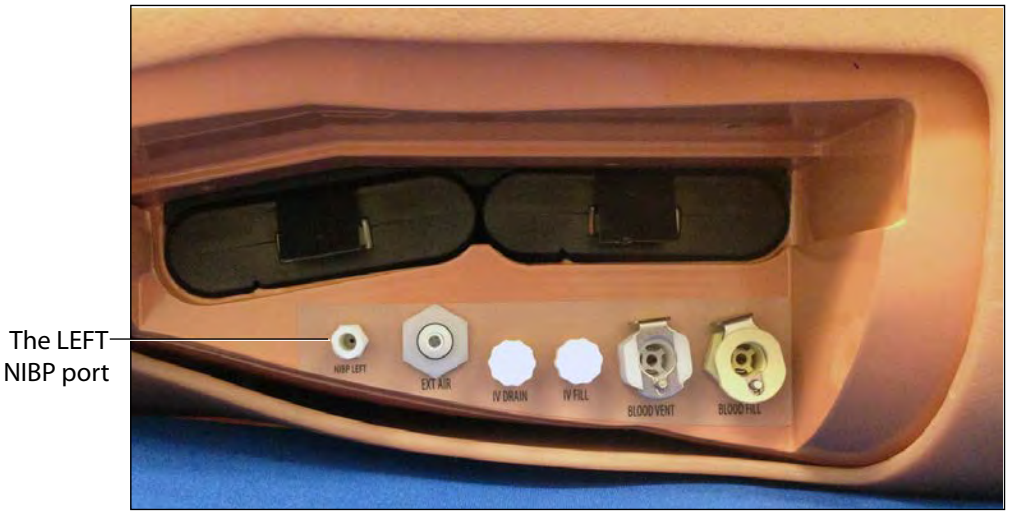
Non-invasive blood pressure monitoring techniques can be used by attaching the standard cuff modified with a T-fitting and adapters.

To modify a standard cuff for use with the maternal mannequin:

1. Using a standard blood pressure cuff, cut the hose that connects to the pressure gauge.
2. Insert one of the supplied adapter fittings into each of the open ends of the cut hose. Use a female fitting on one end and a male fitting on the remaining end.
3. Insert the T-fitting into the hose adapters.

The Blood Pressure Cuff with T-Fitting

4. Locate and connect the other end of the T-fitting to the NIBP port located on either side of the mannequin's torso.



The Battery Compartment and Ports

Non-invasive blood pressure may now be taken using the return-to-flow technique.

5. Store the modified blood pressure cuff with the mannequin.

Korotkoff Sounds

Korotkoff sounds can be auscultated on either arm.

To auscultate Korotkoff sounds,

1. Wrap the sphygmomanometer cuff around the arm on the same side as the connected NIBP port.
2. Place the stethoscope just above the brachial pulse.
3. Pump up the blood pressure cuff and let the cuff pressure drop slowly by opening the valve on the bulb slightly.
4. Monitor the pressure displayed on the cuff gauge.

All five phases should be recognized:

- Phase I - Clear, repetitive, tapping sounds (Systolic)
- Phase II - Longer beats, with some swishing sounds
- Phase III - Crisp, more intense rhythm sounds
- Phase IV - Muffled, less distinct sounds
- Phase V - Sounds disappear completely (Diastolic)

Defibrillation and Cardioversion

Lucina is designed to safely absorb the energy discharged from manual and automatic defibrillators. Standard defibrillation energy levels should be used for positive learning reinforcement and to avoid negative training transfer.

However, use of a defibrillator for training purposes represents an operational hazard equivalent to use of a defibrillator on a real patient. Consequently, ALL SAFETY PRECAUTIONS for the use of defibrillators MUST BE FOLLOWED as if the simulator were a patient. Consult the specific defibrillator's User Manual for further information.

The following cautions should be observed:

- Defibrillation should be performed on the defibrillation electrodes only. If defibrillation is performed over any ECG electrode, high voltage may be present on the remaining connectors during the shock. This may also damage ECG circuitry. Avoid touching any nearby ECG posts.
- To prevent overheating, DO NOT provide more than three (3) defibrillation discharges in a sequence per minute during the training session (maximum 200 joules with biphasic defibrillation and 360 joules with a monophasic defibrillation). Avoid a large number of consecutive discharges as may damage the simulator. Leave at least 30 minutes recovery period after a sequence of more than nine consecutive discharges.
- Do NOT provide more than nine consecutive discharges over three minutes without recovering for 30 minute before the next discharge as it may damage the simulator.
- Do NOT let the simulator come in contact with electrically conductive surfaces or objects during defibrillation. A flame-supporting atmosphere, for example, with a high content of oxygen, should be avoided during defibrillation.
- Keep the simulator's chest dry. Special attention should be taken when using the urinary system or the vaginal bleeding features.
- To prevent pitting of the chest skin electrode, do NOT apply conductive gel or conductive defibrillation pads intended for patient use.
- Do NOT use cables or connectors having visible damage.
- Do NOT spill fluids over any component inside the simulator torso. This could damage the system and may also present a possible hazard for the operator.
- When using a manual defibrillator, the ECG can be monitored via the defibrillator paddles. Coarse ventricular fibrillation and high-rate ventricular tachycardia cardiac rhythms are automatically recognized as "shockable" rhythms.
- With each defibrillation, the simulator automatically records the amount of energy discharged and the time defibrillation was performed. The

simulated patient response to defibrillation is determined by the scenario script or instructor intervention. Thus, cardioversion is not automatically determined by the physiological models.

- The minimum electrical charge recognized by the circuitry within the simulator is 20 joules.
- Monophasic and Biphasic defibrillators can be used with either paddles or hands-free connectors.
- For paddle placement on the chest, the simulator comes with two anterior defibrillation disks (provided in the accessory kit). Screw the disks onto the threaded connections or leave the threaded connections, as required.

The Defibrillation Ports

NOTE: The **Defib** parameter, located on the Cardiovascular view, is also available for virtual defibrillation.

Cardiac Pacing

A standard transthoracic cardiac pacemaker can be connected to the simulator using the anterior defibrillation connection. The software automatically detects and responds to pacing signals (from 20 to 200 mA, in increments of 10).

Three parameters can be used to simulate pacing within the software:

- **Pacing Capture Threshold** - determines the minimum pacing current necessary to pace the heart.
- **Pacing Current** - simulates a specific amount of current discharged by an external cardiac pacemaker.
- **Pacing Rate** - determines the cardiac rate when the Pacing Current is at or above the Pacing Capture Threshold

All three parameters are located on the Cardiovascular view.

Fluids

Lucina is capable of vaginal bleeding, IV fluid administration and urine output.

IMPORTANT: Use only clear distilled water, distilled water tinted with food coloring, or distilled water mixed with white vinegar (50/50) inside the mannequin. Administration of any other type of fluid is NOT supported and may damage the system.

Bleeding and blood administration are controlled from the Fluids view in Müse. To access the Fluids view, from the **Run** screen, click the blood droplet on the human form. The Fluids parameters appear.

The Fluids View

Fluids			
Anatomy, Physiology and Clinical Signs	**Description**	**Software Control**	**Manual Control**
Vaginal Bleeding	The simulator can exhibit vaginal bleeding at a rate controlled by the instructor.	VIEW: **Fluids** PARAMETER(S): **Vaginal Bleeding Severity**	See *Vaginal Bleeding* on the following pages.
Blood Loss	The software can simulate blood loss, causing appropriate physiological changes in the patient.	VIEW: **Fluids** PARAMETER(S): **Fluid Loss Blood, Fluid Loss Plasma**	None required.
Urinary Catheterization	The simulator supports urinary catheterization. When catheterized, the simulator can produce urinary output of 50 mL.	None required.	See *Urinary Catheterization* on the following pages.
IV Access	The simulator's right and left hands and arms provide intravenous access locations.	None required.	See *IV Access* on the following pages.
IV Medication Administration	Bolus injections can be administered utilizing standard syringes while continuous IV infusions can be administered using infusion devices. Injections can be administered in the IV hands and arms bilaterally at the dorsal metacarpal, basilic, median antebrachial, ante-cubital fossa and median cubital locations.	Administered IV medications must be set by the instructor. Medications are administered via the Medications palette.	Up to 300 mL of administered IV fluid are collected in reclaim bags located in the simulator's arms. If additional fluid administration is desired, an empty IV bag and tubing can be connected to the IV Drain port located on the simulator's left side.

Fluids			
Anatomy, Physiology and Clinical Signs	**Description**	**Software Control**	**Manual Control**
IV Fluid Administration	IV fluids can be administered in the IV hands and arms bilaterally at the dorsal metacarpal, basilic, median antebrachial, ante-cubital fossa and median cubital locations.	Administered IV fluids must be set by the instructor. VIEW: **Fluids** PARAMETER(S): **Colloid Infusion, Crystalliod Infusion, PRBC Infusion, Whole Blood Infusion** *Fluid administration can also be achieved by using the Intervention palettes.*	Up to 300 mL of administered IV fluid are collected in reclaim bags located in the simulator's arms. If additional fluid administration is desired, an empty IV bag and tubing can be connected to the IV Drain port located on the simulator's left side.

Vaginal Bleeding

NOTE: Vaginal bleeding can only be performed when the mannequin is laying down flat in a supine position.

Blood loss is continuously reported to the physiological models. The models respond to the reported blood loss with the appropriate cardiovascular and respiratory system changes to heart rate, blood pressure, and respiratory parameters.

The vaginal bleeding reservoir holds up to 2 liters of fluid, allowing for simulation of the Class III postpartum hemorrhage.

The amount of vaginal bleeding can be set from the **Vaginal Bleeding Severity** menu: none, mild, moderate, severe and profuse.

NOTE: When the blood pressure diminishes, the effective blood flow diminishes as well. If the patient's physiological condition cannot support the desired blood flow, a lower blood flow than requested will occur.

IMPORTANT: If any fluid gets under the skin during a vaginal bleed, follow these cleaning instructions immediately to prevent damage to the simulator:

1. Ensure the abdomen is installed on the torso whenever the mannequin is positioned upright.
2. Elevate the torso.

3. Lean the mannequin forward.
4. Unzip the torso skin zipper.
5. Open the skin on the back to expose the area under the buttock.
6. Clean the area where fluid is located.
7. Reattach the skin and return the mannequin to supine position.
8. Clean any remaining liquid in the front of the vaginal opening.

For instructions on filling the blood tank, connecting the blood tank to the simulator and installing the postpartum uterus, please see the *Configuring the Mannequin* section of this user guide.

Hematology Model

The physiological model calculates hematocrit values (i.e. percentage of total blood hemoglobin) dynamically and continuously, taking into account blood and fluid losses, as well as the intravenous infusion of fluids such as whole blood, packed red blood cells, colloids and crystalloids.

Instructors can create patients with both normal and pathophysiological hematocrit levels. In addition, learners discover how administering various fluids affects hematocrit, the oxygen-carrying capacity of blood, and the resulting patient response.

The following important assumptions have been made in the design of the Hematology Model:

- Blood is comprised of two components: red blood cells and plasma.
- Plasma is comprised of two components: colloid and crystalloid. The term colloid is used to describe substances that generate a clinically significant colloid osmotic pressure - for example, fresh frozen plasma, albumin and hetastarch. The term "crystalloid" is used to describe salt solutions for infusion - for example, normal saline, dextrose in water and Ringer's Lactate.
- The mixing of blood and its various constituents is instantaneous and homogeneous. In other words, one liter of crystalloid administered intravenously equilibrates immediately and homogeneously throughout the entire circulation.
- This Hematology Model does not distinguish between the differing clinical effects of colloids and crystalloids. For example, osmotic pressures and capillary leakage rates are not taken into account. Likewise, fluid kinetics and fluid distribution within the circulation and interstitial and intracellular spaces are also not modeled.

In the Hematology Model, the following model variables, definitions and relationships have been established:

- **Red Blood Cell Volume**: The volume of red blood cells within the circulation.
- **Plasma Volume**: The volume of plasma within the circulation.
- **Total Blood Volume:** The volume of blood (i.e. Red Blood Cell Volume + Plasma Volume) within the circulation.
- **Blood Volume Loss:** The amount or rate of decrease in the total blood volume. A given amount or rate of blood loss proportionally decreases both the Red Blood Cell Volume and the Plasma Volume according to the current hematocrit.
- **Plasma Volume Loss:** The amount or rate of decrease in the plasma volume. A given amount or rate of plasma loss decreases the plasma volume without changing the red blood cell volume. Plasma Volume Loss refers collectively and generically to all plasma fluid losses, including evaporative, transcellular (e.g. ascites, pleural effusion), bowel and third space losses.
- **Hematocrit:** The ratio of Red Blood Cell Volume to Total Blood Volume, expressed as a percentage.

The Genitourinary System

The simulator allows for the insertion of a 14 Fr urinary catheter and excretion of urine.

The genitourinary (GU) system must be primed prior to use.

IMPORTANT: Use only clear distilled water, distilled water tinted with food coloring, or distilled water mixed with white vinegar (50/50) inside the mannequin. Administration of any other type of fluid is NOT supported and may damage the system.

Be sure to clean the system before storing the mannequin.

For more information on cleaning the GU system, see *Cleaning the Genitourinary System* in the *Care and Maintenance* section.

Priming the Genitourinary System

Prior to catheterizing the simulator, the genitourinary (GU) system must be primed.

To prime the GU system:

1. Fill a syringe with distilled water (and clinically appropriate food coloring if desired).
2. Connect the syringe to the GU filling tool.
3. Plug the GU filling tool into the **Urinary** port (colored yellow) located on the torso baffle inside the mannequin.
4. Slowly push in the distilled water until fluid drains into the overflow reservoir on the GU filling tool (approximately 70 mL +/- 10 mL).
5. Disconnect the GU filling tool from the **Urinary** port.
6. Store the GU filling tool in a secure location for future use.

For more information on draining and cleaning the GU system, see *Cleaning the Genitourinary System* in the *Care and Maintenance* section.

Inserting a Urinary Catheter

Once the GU system has been primed, catheterize the simulator using a standard 14 Fr urinary catheter lubricated with cottonseed oil spray.

When the catheter is inserted, simulated urine begins to flow until the internal bladder is empty.

NOTE: The urinary catheter needs to be inserted approximately 4 1/2″ to achieve urine flow.

Medication and Fluid Administration

Lucina supports pharmacological interventions through pre-programmed pharmacokinetic and pharmacodynamic parameters that are established for more than 50 intravenous drugs.

Standard syringes and infusion devices can be utilized to administer medications and fluids through bilateral IV access sites at the dorsal metacarpal, cephalic, basilic, median antebrachial and median cubital locations.

IMPORTANT: Use only clear distilled water, distilled water tinted with food coloring, or distilled water mixed with white vinegar (50/50) inside the mannequin. Administration of any other type of fluid is NOT supported and may damage the system.

Vein Punctures

When the veins are punctured, clinically appropriate flashback occurs. To enable flashback, the IV system must be primed prior to use. Ensure the cap is on the **IV Drain** port prior to priming or using the IV system to avoid any fluid overflow.

The vein tubing must be replaced after a certain number of punctures to avoid any fluid leakage within the simulator arms. Leakage will occur when the IV system is primed.

Replace vein tubing after:

- A single puncture from a 14 gauge cannula or needle
- Three punctures with a 16 gauge cannula or needle
- 10 punctures from a 18 gauge or 20 gauge cannula or needle

NOTE: A 14 gauge needle can be used in the forearm veins only. Do not use a 14 gauge cannula or needle on the antecubital or dorsal veins.

IMPORTANT: After each use of the IV system, the system must be cleaned. The IV system must be empty prior to priming or using the IV system. For more information on cleaning the IV system, see *Cleaning the IV System* in the *Care and Maintenance* section.

Priming the IV System

To prime the IV system:

1. Ensure the IV system is empty prior to filling; connect the 140 mL syringe to the IV drain port and withdraw fluid and/or air until a vacuum is formed.
2. Fill a 50 mL syringe with distilled water (and clinically appropriate food coloring if desired for added realism).

3. Connect the filled syringe to the **IV FILL** port on the left side of the simulator's torso.

The Battery Compartment and Ports

4. Depress the syringe until no water remains in the syringe and disconnect from the **IV FILL** port.

   WARNING: If a flashback does not occur, do NOT inject any fluid and remove the needle immediately. Repeat the priming directions and ensure you have injected the needle properly and into the simulated vein.

   NOTE: Fluids and medications can be administered intravenously by attaching the tubing from a standard IV solution set to the desire IV access site. If administering more than 300 mL, connect an external empty IV bag and tubing to the **IV DRAIN** port located on the left side of the mannequin's torso to prevent overfilling the simulator.

Administering Intrauterine Balloon

The simulator allows for the insertion of an intrauterine balloon used to manage postpartum hemorrhage.

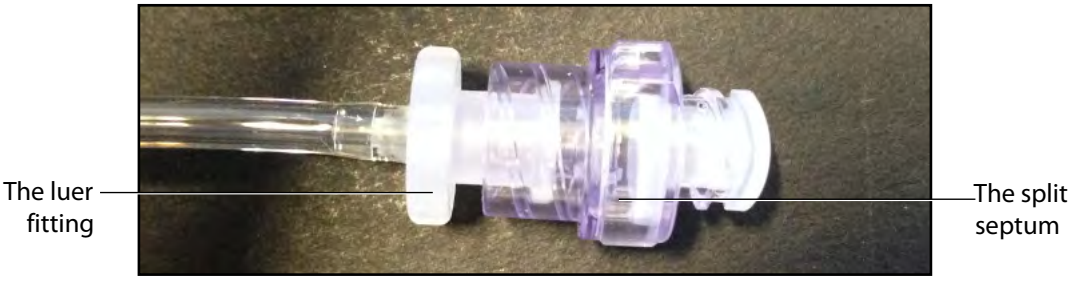
To insert and fill the intrauterine balloon:

1. Configure mannequin with the postpartum boggy/contracted uterus.
2. Lubricate the end of the balloon with cottonseed oil and insert into the uterus.
3. Fill intrauterine balloon with 500 mL distilled water, per manufacturer's recommendations.

To remove the intrauterine balloon, remove the 500 mL water from the balloon and remove the catheter from the uterus.

Administering an Epidural

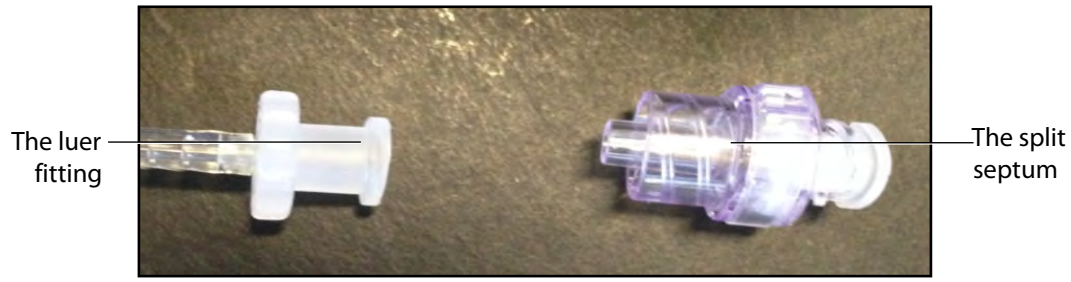
Fluid can be administered to the mannequin through a permanent epidural port located at the back of the mannequin.



The Epidural Port

An epidural cannula can be inserted through the luer access split septum attached to the epidural port located on the back of the maternal mannequin.

Prior to administering an epidural, the epidural system must be empty. To empty the epidural system, remove the split septum fitting from the epidural port located on the back of the maternal mannequin.



The Epidural Port

Connect a syringe to the luer fitting. Withdraw the syringe until no air or water is present.

IMPORTANT: Use only clear distilled water, distilled water tinted with food coloring, or distilled water mixed with white vinegar (50/50) inside the mannequin. Administration of any other type of fluid is NOT supported and may damage the system.

The epidural system must be primed prior to use if cerebrospinal fluid aspiration is desired. The epidural reservoir holds a maximum of 60 mL of fluid. This reservoir is not pressurized and if it is not filled completely, air may be aspirated back with fluid.

Once the epidural port is primed, fluid can be aspirated from the epidural port.

IMPORTANT: Clean the epidural system before storing the mannequin.

For detailed instructions on cleaning the epidural system, please see *Cleaning the Epidural System* in the *Care and Maintenance* section.

Priming the Epidural Site

If cerebrospinal fluid aspiration is desired, the epidural site must be primed before use.

To prime the epidural system:

1. Ensure the epidural system is empty prior to priming (as described in *Administering an Epidural*).
2. Fill a 50 mL syringe with distilled water.
3. Connect the filled syringe to the epidural port and slowly depress the syringe until no water remains in the syringe.
4. Reconnect the luer access split septum to the epidural port.

Administering Suppositories

Up to five small, aspirin-sized suppositories can be administered via the simulator's rectum.

The suppositories must be removed and the rectum cleaned after administration.

For information on how to clean the rectum, see the *Care and Maintenance* section of this user guide.

Sounds

A variety of simulated sounds are available to enhance realism. A patient must be running in Müse for any sounds to be available.

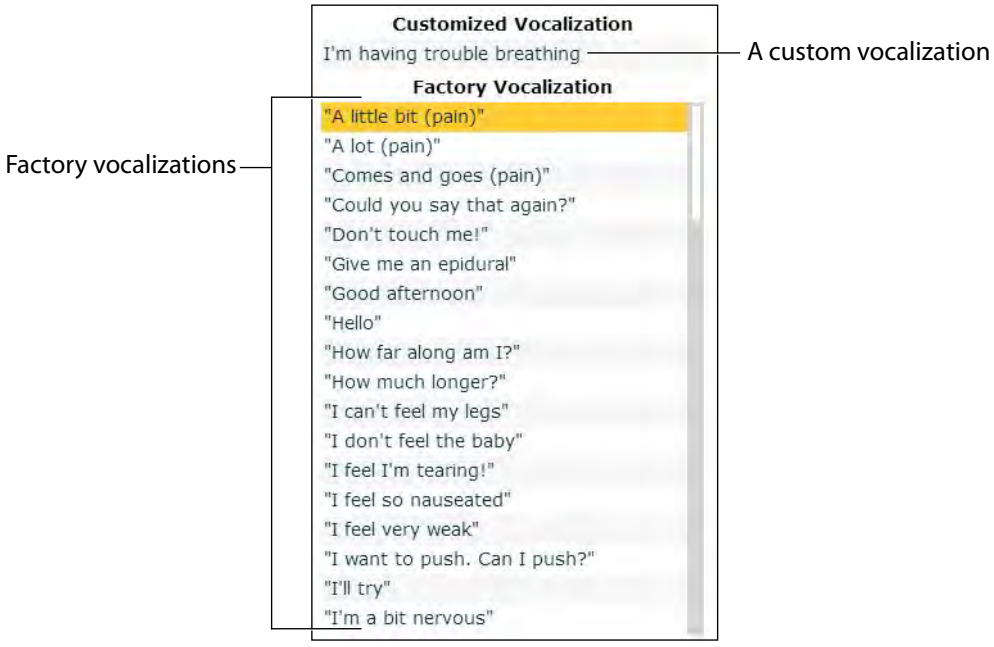
Patient Speech

Patient speech can be achieved using the Speech Sounds feature in Müse or by using an external Wireless Voice Link (WVL).

Speech Sounds

The Speech Sounds features in Müse can be used to make the mannequin vocalizations such as pain ratings, various phrases and utterances such as screaming and panting. Custom vocalizations recorded by the user and uploaded to Müse from the System Administration menu can also be played from the Speech Sounds menu.

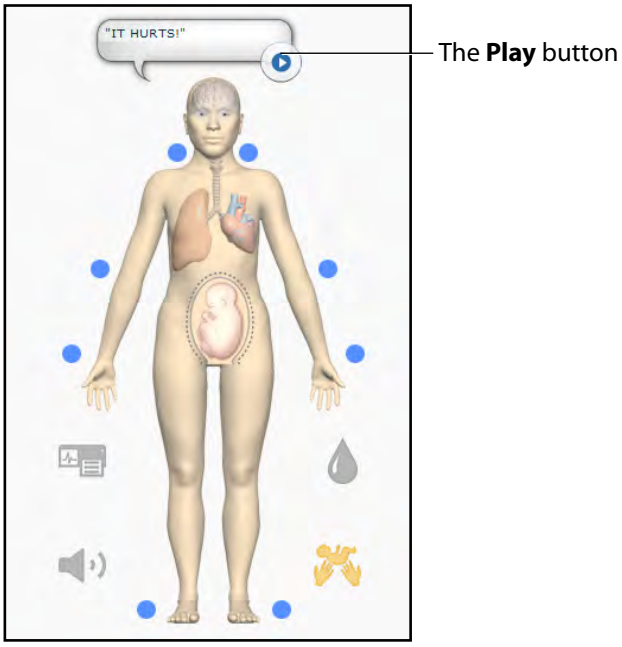
To play a vocalization, click the Speech balloon. The Speech Sounds menu appears.



The Speech Sounds Menu

Select the desired vocalization. The vocalization plays, and the list disappears.

To replay the last vocalization, click the **Play** button in the Speech balloon.



The Speech Balloon with Play Button

Wireless Voice Capability

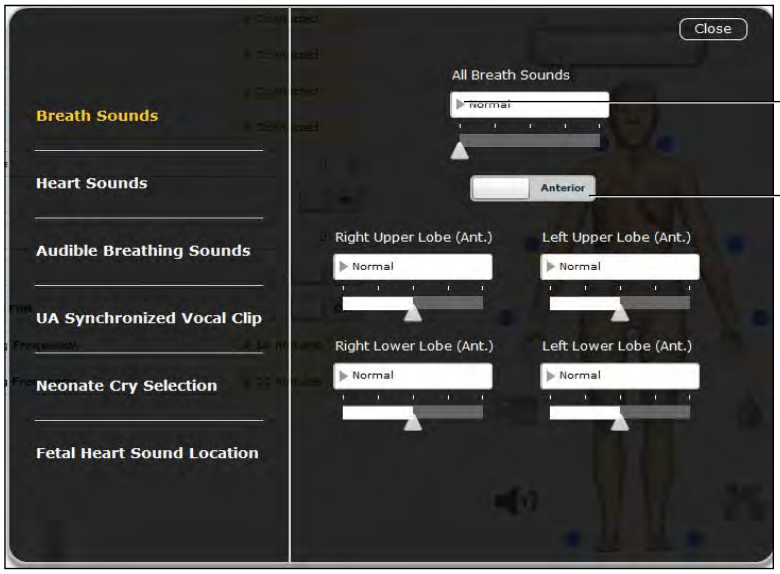
In addition to the pre-programmed speech, any response can be transmitted through the mannequin speakers using the Wireless Voice Link.

For detailed instructions on using the wireless voice link, see the *Wireless Voice Link* section of this user guide.

Breath Sounds

Breath sounds are independently synchronized with ventilation of the left and right lungs. Fourteen speakers, eight anterior and six posterior, provide breath sounds that can be auscultated. Anterior and posterior sounds and each of the four quadrants of the torso can be set independently to produce a particular breath sound

Breath sounds can be adjusted by clicking the Sound Control icon on the Run screen. When the Sounds panel appears, select **Breath Sounds**. The Breath Sounds menu appears.



The Breath Sounds Menu

Use the **Anterior/Posterior** switch to toggle between anterior and posterior breath sounds.

Click any one of the drop-down menus that control one of the four quadrants to change the type of sound. Click and drag the slider for each location to adjust the volume.

Selecting a sound from the **All Breath Sounds** menu changes all posterior or anterior sounds.

Click and drag the slider to adjust the volume of all anterior or posterior quadrants.

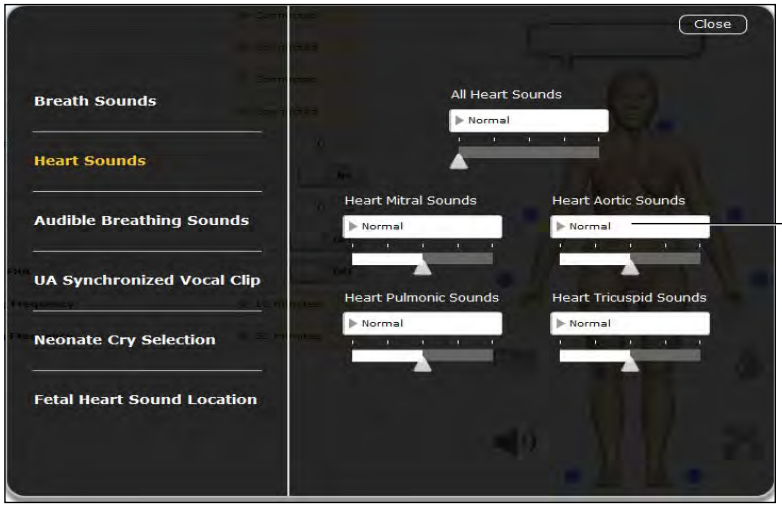
The default volume level is 50%.

Heart Sounds

Heart sounds emanate from four speakers and are synchronized with the cardiac cycle. Heart sounds can be auscultated over the left and right sternal border, right lower sternal boarder and apex.

By default, heart sounds are set to the Normal sound.

Heart sounds can be adjusted by clicking the Sound Control icon on the Run screen. When the Sounds panel appears, select **Heart Sounds**. The Heart Sounds menu appears.



The Heart Sounds Menu

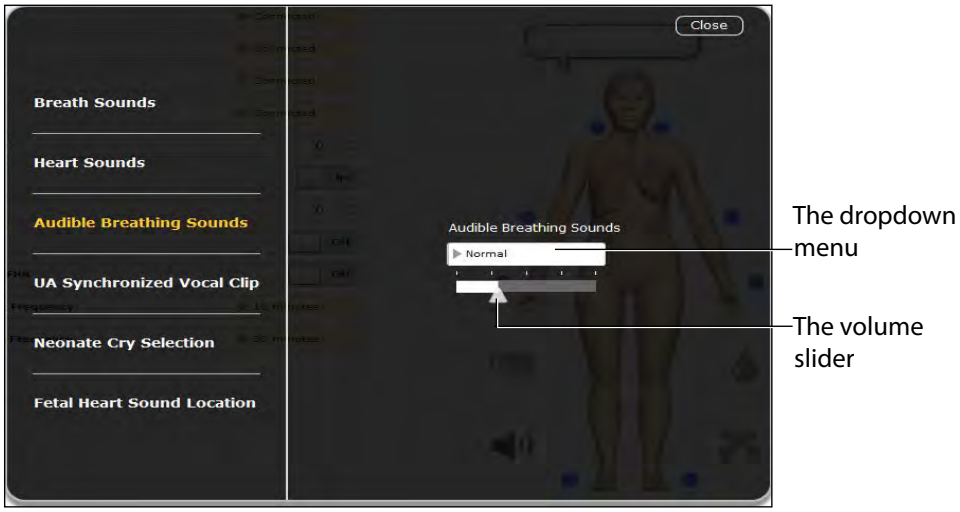
Click any of the drop-down menus to change the type of sound. Click and drag the slider beneath the drop-down menu to adjust the volume.

The default volume level is 50%.

Audible Breathing Sounds

Audible breathing sounds, such as wheezing and gasping, can be heard without the use of a stethoscope.

Audible breathing sounds can be adjusted by clicking the Sound Control icon on the Run screen. When the Sounds panel appears, select **Audible Breathing Sounds**. The Audible Breathing Sounds menu appears.



The Audible Breathing Sounds Menu

Click the **Audible Breath Sounds** drop-down menu to change the type of sound.

Click and drag the slider to adjust the volume.

By default, no breathing sound is selected.

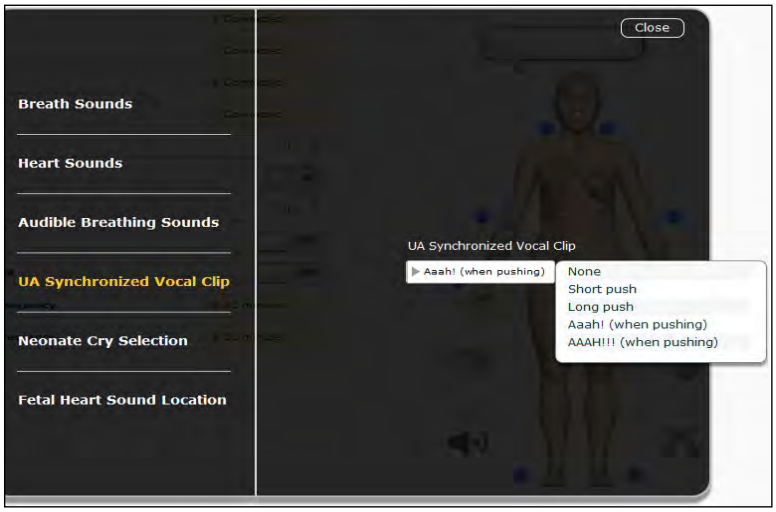
The Default volume level is 30%.

NOTE: The Audible Breath Sounds volume control applies as well to the speech sounds and UA synchronized vocal clip.

UA Synchronized Vocal Clip

The UA Synchronized Vocal Clip menu can be used to select a sound to be played in synchrony with uterine activity (UA). The sound is repeated each time a uterine contraction occurs.

The UA Synchronized Vocal Clip can be adjusted by clicking the Sound Control icon on the Run screen. When the Sounds panel appears, select **UA Synchronized Vocal Clip**. The UA Synchronized Vocal Clip menu appears.



The UA Synchronized Vocal Clip Menu

Click the **UA Synchronized Vocal Clip** drop-down menu to change the type of sound.

To adjust the volume of the UA Synchronized Clip, click on **Audible Breathing Sounds** and drag the slider.

Neonate Cry Selection

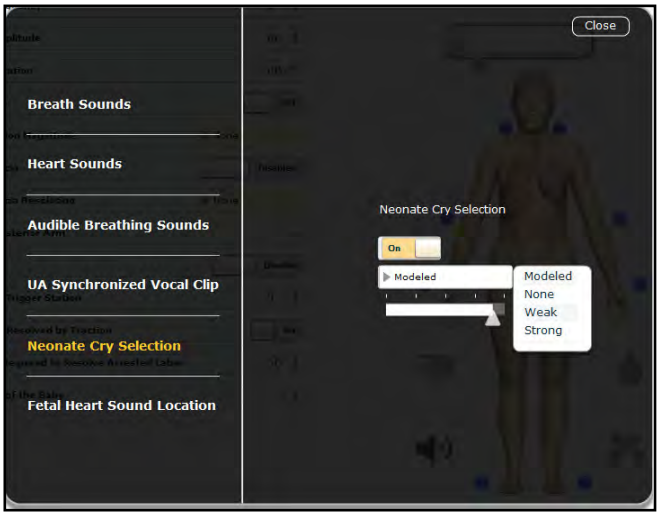
The Neonate Cry Selection menu can be used to control neonate crying.

Changing this selection prior to delivery causes the selected crying sound to be the default when the baby is marked as delivered.

The Neonate Cry Selection menu can also be used after delivery to change or stop crying sounds.

If Modeled is selected, the neonate cry is directly related to the fetal physiology at the time of birth.

The Neonate Cry Selection can be adjusted by clicking the Sound Control icon on the Run screen. When the Sounds panel appears, select **Neonate Cry Selection**. The Neonate Cry Selection menu appears.



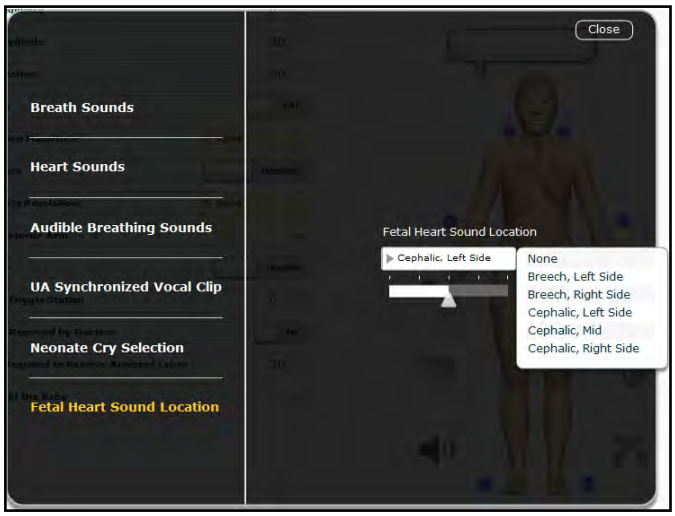
The Neonate Cry Selection Menu

Click the **Neonate Cry Selection** switch to toggle crying **On** or **Off**. Click the **Neonate Cry Selection** drop-down menu to change the type of sound. Click and drag the slider to adjust the volume.

Fetal Heart Sound Location

The Fetal Heart Sound Location menu can be used to control the location of where the fetal heart sounds can be heard in the maternal abdomen. This feature allows instructors to select the appropriate location based on the current fetal position.

The Fetal Heart Sound Location is adjusted by clicking the Sound Control icon on the Run screen. When the Sounds panel appears, select **Fetal Heart Sound Location**. The Fetal Heart Sound Location menu appears.



The Fetal Heart Sound Location Menu

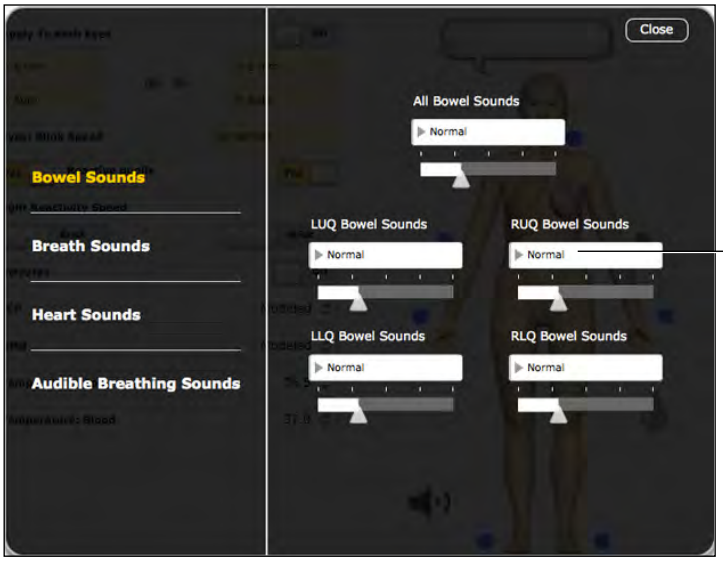
Click the **Fetal Heart Sound Location** drop-down menu to change the location of fetal heart sounds.

Click and drag the slider to adjust the volume.

Bowel Sounds (Non-Gravid Only)

The Bowel Sounds menu can be used to control bowel sounds.

The bowel sounds can be adjusted by clicking the Sound Control icon on the Run screen. When the Sounds panel appears, select **Bowel Sounds**. The Bowel Sounds menu appears.



The Bowel Sounds Menu

Independent control of the type and volume of bowel sounds may be selected in each anatomical region. To affect the bowel sounds simultaneously in all anatomical regions, select **All Bowel Sounds** and the desired sound and volume.

Click any of the drop-down menus to change the type of sound. Click and drag the slider beneath the drop-down menu to adjust the volume.

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Care and Maintenance

Maintaining the Fidelis requires careful treatment of the electronic and mechanical components. Each time the Fidelis is assembled or disassembled, make sure all components are properly handled and correctly removed from or placed into storage.

NOTE: Certain hardware components within the Fidelis simulator and Instructor Workstation are not user serviceable. Consult CAE Healthcare Customer Service to address any hardware maintenance concerns.

CAE Healthcare Assurance Programs

General Information

CAE Healthcare patient simulator products come with a one-year Assurance support and maintenance plan. All plans begin at the date of shipment or CAE Healthcare installation. You may upgrade your first-year plan to an enhanced plan and receive remedial and planned maintenance. To prevent equipment downtime and delays after the plan expires, CAE Healthcare encourages customers to purchase extended Assurance plans for all subsequent years.

Units Out of Plan

For units no longer under an Assurance plan that require repairs, the Time and Materials service plan applies. For more information, see *Time and Materials* section of this Care and Maintenance section.

To place an out-of-plan unit under a support and maintenance plan, CAE Healthcare reserves the right to have the patient simulator inspected by a CAE Healthcare-approved technician at the customer's expense. If necessary, the unit would have to be repaired at the customer's expense prior to issuance of a plan.

The repairs required as the result of the examination will be quoted on a time and material basis.

Plan Period

Assurance plans are not ordinarily offered for periods of less than one year. However, multiple-year plans may be arranged for up to an additional three years. Discounts are available for purchase of multiple-year plans.

Limitations of Plan

CAE Healthcare may elect which remedy or combination of remedies to provide at its sole discretion. CAE Healthcare shall have a reasonable time after determining that a defective material exists to repair or replace defective material. CAE Healthcare's replacement material will be manufactured from new and/or serviceable parts. CAE Healthcare's Assurance plan applies to repaired or replaced materials for the balance of the applicable period of the original support and maintenance plan or ninety days from the date of shipment of a repaired or replaced material, whichever is longer. CAE Healthcare warrants its labor for 30 days or the balance at the applicable period of the original support and maintenance plan, whichever is greater.

CAE Healthcare shall not be liable under this Assurance plan for incidental or consequential damages, or in the event of any unauthorized repairs or modifications have been made or attempted, or when the product, or any part thereof, has been damaged by accident, misuse or abuse. This plan does not cover normal wear or tear, staining, discoloration or other cosmetic irregularities that do not impede or degrade product performance. Any damage or malfunction as a result of the installation of software or hardware, not authorized by CAE Healthcare, will be repaired under the Time and Materials service plan (see *Time and Materials* section).

CAE Healthcare's Assurance plans do not cover products that have been received improperly packaged, altered or physically damaged. Products will be inspected upon receipt.

Some states in the USA do not allow the exclusion or limitations of incidental or consequential damages, so the limitations above may not apply to you. The Assurance plan gives you specific legal rights and you may also have other rights, which vary from state to state.

Return Materials Authorization (RMA)

No product may be returned directly to CAE Healthcare without first contacting CAE Healthcare for an RMA number. If it is determined that the product may be defective, the customer will be given an RMA number and instructions for returning the product. An unauthorized return (e.g., one for which an RMA number has not been issued) will be returned at the customer's expense. Authorized shipments are to be shipped prepaid to the address on the RMA. The original box and packaging materials should be kept for storing or shipping your product. To request an RMA, please contact Customer Service.

Training for Life™

With CAE Healthcare's new Training for Life, you now have access to free and unlimited beginner to advanced simulator training courses for everyone on your staff with the purchase of a CAE Assurance plan. This benefit extends to everyone in your institution for the life of your simulator. Training for Life offers you the opportunity to refresh your skills, learn current best practices, and ensure you are getting maximum training value from your simulator. Training for Life includes access to all courses taught by our clinical experts and certified technicians in our Sarasota, Florida and Mainz, Germany offices.

System Software Upgrade Support

Customers with current support and maintenance plans are entitled to receive updates and upgrades to applications software previously purchased. Installation of the system software is the user's responsibility.

The System Software Upgrade Support includes software upgrades for base software and purchased optional learning modules.

NOTE: This does not apply for major upgrades or technological enhancements.

Time and Materials

For those systems not under a support and maintenance plan, service will be provided as required on a Time and Materials basis:

The principal period of on-site support (customer's local time) is:

- Monday through Friday, 8:00 AM to 5:00 PM (customer's time zone)
- Holiday and non-business days excluded
- Support outside principal period is billed at the premium rate (hourly rate x 1.5)

A minimum of 48 hours notice is required for scheduling an on-site support call. Urgent on-site support with less than 48 hours notice will be charged at the premium hourly rate.

On-site time is described as the time period commencing from arrival at customer site through departure from customer site.

How to Contact Customer Service

For customer service, please contact CAE Healthcare.

CAE Healthcare Customer Service Headquarters - United States and Latin America
Monday - Friday from 7:00 a.m. to 6:00 p.m. ET
Toll Free: +1 (866) 462-7920
24-hour Hotline: +1 (941) 342-5605
Fax: +1 (941) 342-5600
Email: customerservice@caehealthcare.com
Website: www.caehealthcare.com

CAE Healthcare Customer Service - Canada
Monday - Friday from 8:00 a.m. to 5:00 p.m. ET
Toll Free: +1 (877) 223-6273
Email: can.service@caehealthcare.com

CAE Healthcare Customer Service - Europe, Middle East and Africa
Monday - Friday from 8:00 a.m. to 5:00 p.m. CET
Phone: +49-(0) 6131 4950354
Fax: +49 (0) 6131 4950351
Email: international.service@caehealthcare.com

CAE Healthcare Customer Service - United Kingdom and Ireland
Monday - Friday from 9:00 a.m. to 5:00 p.m. GMT
Phone: +44(0)800-917-1851
Email: uk.service@caehealthcare.com

Principal hours of operation exclude holidays and non-business days.

IMPORTANT: Effective January 1, 2014, technical and clinical phone support are available ONLY for products with active support and maintenance plans.

Breakdown

After each use, the Fidelis should be properly disassembled and stored in a secure place. To ensure that the Fidelis remains in good working condition, follow the prescribed CAE Healthcare breakdown procedures below.

Breakdown Steps	
1	Clean the Simulator and Fluid Systems
2	Shut Down the Software
3	Power Off the Simulator
4	Power Off the Fetus

Step 1: Clean the Simulator and Fluid Systems

Each time the following are used during simulation, they must be cleaned of lubricant and fluids with a soft cloth:

- Maternal airway
- Birth canals
- Cervices
- Abdomen
- Fetus

If internal fluid systems were used during simulation (e.g., vaginal bleeding, IV fluids, epidural, genitourinary fluids), the fluid must be drained from the simulator and the fluid systems used must be cleaned.

For more information on cleaning the fluids, see *Cleaning the Internal Systems on page 250*.

Step 2: Shut Down the Software

Shut down the Müse software and any optional TouchPro computers.

To shut down the Müse software on the Instructor Workstation:

a. In the Müse software, click the **Disconnect** icon on the Run screen.

b. Stop any running SCEs.

   The Stop Simulation dialog box appears.

c. Click the **Stop Simulation** button.

   The Simulation stops and returns to the Home page.

d. Click the Account Name in the lower, right-hand corner of the screen.

The Logout dialog box appears.

e. Click **Logout** to exit the software.

To shut down the TouchPro Patient Monitor software:

a. Click the **Settings** button in the bottom, right-hand corner of the TouchPro Patient Monitor screen.

b. From the Settings menu, click **Shutdown**. A warning box appears asking if you want to exit.

c. Click **Shutdown**.

To shut down the TouchPro CTG software:

a. Click the **Settings** button in the bottom, right-hand corner of the TouchPro CTG screen.

b. From the Settings menu, click **Shutdown**.

A warning box appears asking if you want to exit.

c. Click **Shutdown**.

Step 3: Power Off the Simulator

Press the power button on the right side of the simulator's torso.

The simulator powers off.

Step 4: Power Off the Fetus

Press the power button on the back side of the fetus.

The fetus powers off.

Maintenance Advice

Simple care and maintenance helps to ensure that the maternal fetal simulator stays in good working condition. Many problems are caused by inadequate or improper maintenance. Perform a thorough check of the various components each time the simulator is used.

General Simulator Care

Follow these general simulator care guidelines to protect and care for the simulator:

- Avoid the use of writing instruments and sharp objects near the patient simulator to prevent unattractive markings on or tears in the skin.
- Lubricate airway adjuncts and urinary catheters with cottonseed oil spray (and NOT a water-based lubricant) prior to insertion.
- A mild detergent and warm water will remove most marks and stains. Gently rub the soiled area with a soft cloth. Do NOT use ABRASIVE soaps or pads.
- Prior to using moulage of any kind, CAE Healthcare suggests the application of a very light coating of petroleum jelly, followed by a light dusting of baby powder to the simulator's skin. This application makes cleaning the skin easier.
- If any of the bleeding, genitourinary or IV features on the maternal mannequin have been used, drain and clean the simulator as described in the following pages. Failure to drain and clean the systems may cause problems with the system.
- Prior to any simulation, CAE Healthcare suggests applying a light coat of lubricant (cotton seed oil) on the hip skin between the torso and thighs to help prevent rubbing or pinching. Wipe any excess oil to prevent dripping.

Storing the Simulator

When in regular use, the maternal fetal simulator breakdown procedure and general cleanup are sufficient to prepare the simulator for storage.

In addition, be certain to follow these instructions:

- Storage temperature should not exceed 122^{o} F (50^{o} C) or fall below 39^{o} F (4^{o} C).
- If a soft-sided simulator case is being used, the simulator should lay flat on its back.
- The simulator should NEVER be stored or shipped with fluids in the system.

Caring for Electronic Equipment

Do NOT use any of the computer components associated with this system for any other use.

Do NOT connect the computer components to any network of any kind.

Install any CAE Healthcare software updates as soon as they become available.

Inspecting the Airway

The maternal mannequin is equipped with an anatomically accurate airway that supports the practice of various airway management techniques. In the process of performing these techniques improperly or aggressively, the upper airway can be damaged. While such damage may be readily apparent (manifested as a leak in the breathing circuit) when the simulator is connected to a ventilator, it may not be obvious during spontaneous or bag and mask ventilation.

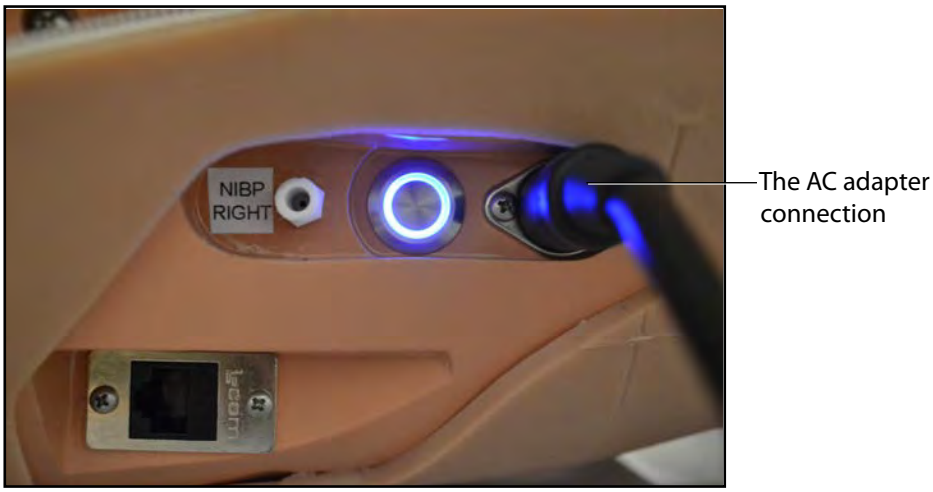
Because damage can occur, occasional visual inspection of the airway is recommended. Using the light of a laryngoscope blade or a flashlight, visually examine both the upper and lower airway. While tears in the upper airway resulting from intubation may be obvious, needle holes in the lower bronchus may not be readily apparent.

If damage to the airway is found, small cuts or tears may be reparable. However, for permanent repair of damaged simulators contact CAE Healthcare Customer Service.

Charging the Batteries

To charge the simulator batteries using the AC adapter:

1. Connect the AC adapter into the port located on the right side of the maternal mannequin's torso (located next to the power button).



The AC Adapter Connection

2. Connect the electrical plug on the other end of the AC adapter to a power source.

Three maternal mannequin battery indicator lights are located on the left side of the mannequin.

When all three indicator lights are illuminated and not blinking, the maternal mannequin's batteries are fully charged.

When two indicator lights are illuminated and not blinking, the maternal mannequin's batteries have less than 50% power remaining.

When one indicator light is illuminated and not blinking, the maternal mannequin's batteries have less than 20% power remaining.

When one indicator light is illuminated and blinking, the maternal mannequin's batteries have less than 15% power remaining.

When one light is illuminating at one time in sequence from left to right, the maternal mannequin's batteries are charging.

NOTE: The batteries charge at a slower rate if the simulator is powered on while the AC adapter is plugged in.

An external battery charger can be purchased to charge the batteries outside of the simulator.

WARNING: If the simulator is still in use, ensure that the AC adapter is plugged into the simulator and a working power source prior to removing both batteries.

To charge the simulator batteries using the external battery charger:

1. Locate the battery compartment cover on the left side of the maternal mannequin's torso.
2. Pull down on the silver security pin and pull the cover away from the torso.

The Battery Compartment and Ports with Cover

The cover is removed and the batteries are visible in the mannequin.

3. Remove the batteries from the simulator by pulling on the tabs and lifting the batteries out of the battery compartment.

   NOTE: Ensure that the battery tab is accessible and not tucked into the battery compartment.

4. Plug the external charger into a power source.
5. Insert the batteries into the external charger charging station.

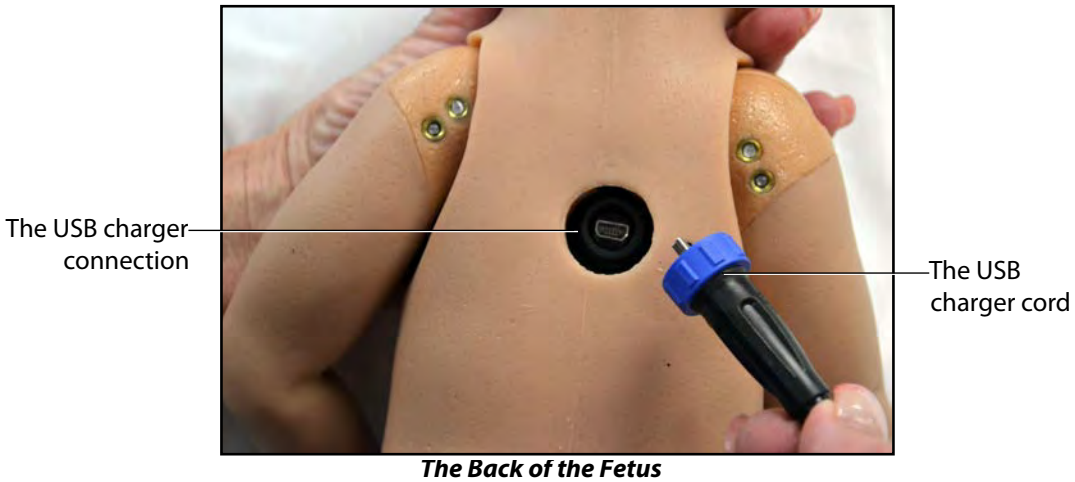
   Batteries require approximately four hours to fully charge.

   NOTE: Batteries will lose charge over time when left in a stored, unused simulator. When storing the simulator for an extended amount of time, remove the batteries from the simulator.

Charging the Fetus Battery

To charge the fetus battery using the USB charger:

1. Connect the USB charger cord (provided by CAE Healthcare) to the back of the fetus.



The Back of the Fetus

2. Connect the other end of the USB charger cord to a USB power source.

The USB Charger Cord

NOTE: A USB AC power adapter may be used to plug the USB cord into a power outlet.

Batteries require approximately 4 to 6 hours to fully charge. The batteries charge at a slower rate when the fetus is powered on during charging.

Cleaning the Internal Systems

The internal systems of the maternal mannequin must be cleaned after each simulation session. Only the systems that were used need to be cleaned.

Cleaning the IV System

To clean the IV system:

1. Connect an empty 140 mL syringe to the **IV DRAIN** port located on the left side of the simulator's torso.

The Battery Compartment and Ports

2. Slowly withdraw air from the port until a vacuum is formed. If only clear fluid was injected into the IV system during use, the cleaning procedure is complete.

IMPORTANT: If colored fluid was injected in the IV system, complete the Priming the IV System instructions in the *Using Lucina* section with clear fluids and complete the *Cleaning the IV system* instructions for a second time.

Cleaning the Bleeding System

The bleeding system needs to be cleaned with distilled water after simulated blood has been used.

Once a month, flush the system with a 50/50 mix of distilled water and white vinegar to keep mineral and algae build up to a minimum. Always flush with distilled water to remove any trace amounts of vinegar.

NOTE: The mannequin should be configured for a postpartum SCE prior to cleaning the bleeding system, with the blood tank and postpartum uterus installed.

1. Make sure the tank has been drained of any simulated blood.

2. Rinse thoroughly the trauma fill tank of any simulated blood.
3. Fill with distilled water or the 50/50 mixture of distilled water and white vinegar.
4. Connect the trauma fill tank to the mannequin. The blue tube connects to the **BLOOD FILL** port and yellow tube connects to the **BLOOD VENT** port.
5. Pressurize the trauma fill tank using the hand pump. Wait until there is reflow in the reclaim bottle.
6. Place absorbent pads under the buttocks and the vaginal opening.
7. From the Instructor Workstation, click on the **System Administration** icon in the upper-right corner of the Müse home screen.

The System Administration Button

The System Administration screen appears.

8. Click on the **Maintenance** tab.

The Maintenance Panel

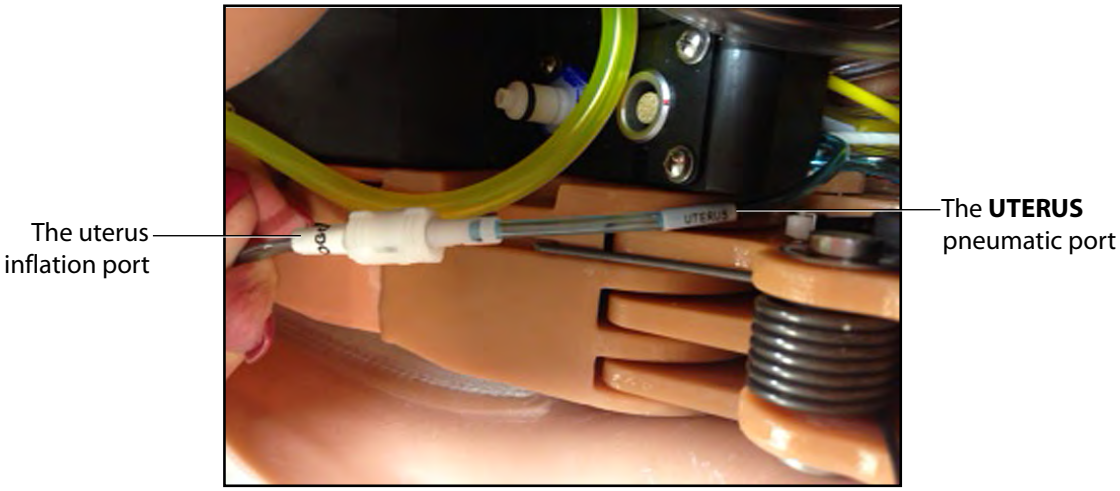
The Maintenance panel appears.

9. Click the **Flush System** button.

   The Flush in progress window appears.

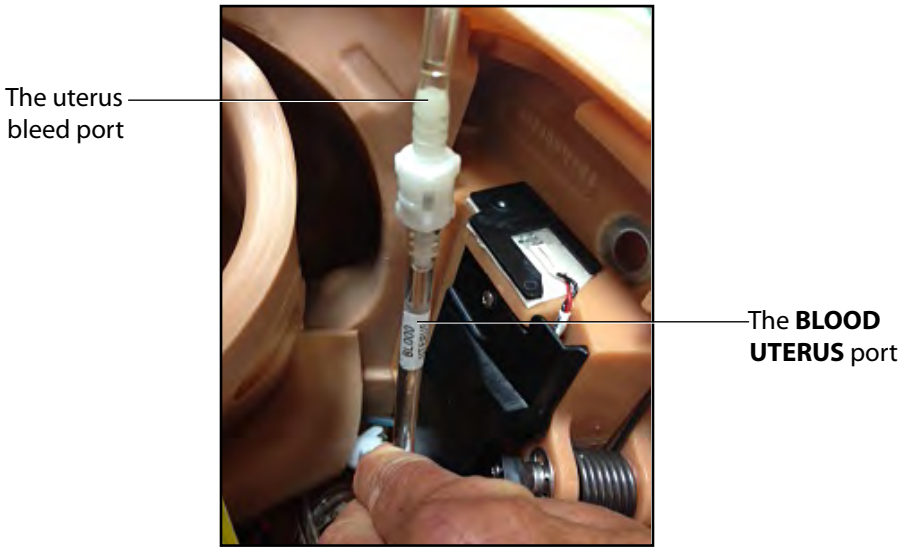
10. Run until the fluids run clear from the simulator and click the **Finished** button.
11. Disconnect the trauma fill tank from the mannequin and depressurize.

12. Disconnect the **UTERUS** pneumatic port from the uterus inflation port



The Uterus Inflation Port and UTERUS Pneumatic Port

13. Disconnect the **BLOOD UTERUS** port from the uterus bleed port.



The Uterus Bleed Port and BLOOD UTERUS Port

14. Ensure all fluid is removed from within the vaginal canal.
15. Wipe the external area particularly the buttocks and under the skin surrounding the vaginal opening.

    The food color will stain more readily if left on for an extended period.
16. Remove the uterus by folding the labia and perineum flaps closed together and pushing the external genitalia up through the birth canal into the mannequin's torso.

17. Hold the labia and perineum closed and slowly lift the uterus out from inside the abdomen.
18. Ensure that no left over fluid spills inside the abdomen.

IMPORTANT: If any fluid gets inside the mannequin, follow these cleaning instructions immediately to prevent damage to the simulator:

a. Ensure the abdomen is installed on the torso whenever the mannequin is positioned upright.

b. Elevate the torso.

c. Lean the mannequin forward.

d. Unzip the torso skin zipper.

e. Open the skin on the back to expose the area under the buttocks.

f. Clean the area where fluid is located.

g. Reattach the skin and return the mannequin to supine position.

h. Clean any remaining liquid in the front of the vaginal opening.

Draining the Blood Tank

To drain the blood tank:

1. Empty the trauma fill tank and connect the blue line to the mannequin **BLOOD FILL** port. Do not connect the yellow line.
2. Ensure the yellow pressure relief knob on the trauma fill tank is open so that the tank is able to vent during the subsequent process.
3. Disconnect the uterus bleed port (clear tubing) from the mannequin.
4. From the Instructor Workstation, click on the **System Administration** icon in the upper-right corner of the Müse home screen.

The System Administration Button

The System Administration screen appears.

5. Click on the **Maintenance** tab.

The Maintenance Panel

The Maintenance panel appears.

6. Click the **Flush System** button.

   The fluid from the mannequin's blood tank should start flowing back into the trauma fill tank.

7. Observe the blood tank output line. When air bubbles have stopped moving, the tank is empty.
8. Click the **Finished** button.
9. Disconnect the trauma fill tank from the mannequin.
10. Empty the trauma fill tank.
11. Rinse thoroughly and allow the tank to dry.

Draining the Bleeding System

To drain the bleeding system:

1. Disconnect the blood tank from the mannequin.
2. Empty the trauma fill tank and overflow bottle.

3. Connect the blue line to the mannequin **BLOOD FILL** port and the yellow line to the **BLOOD VENT** port.

The Battery Compartment and Ports

4. Ensure the yellow pressure relief knob on the trauma fill tank is closed and pressurize the tank.

   When enough pressure has built up (about 25 to 35 strokes), there will be a sharp release and any remaining liquid will be flushed in the overflow bottle.

5. Release pressure in the trauma fill tank by turning the yellow knob.
6. Disconnect tank and empty and clean the overflow bottle.

Cleaning the Epidural System

To clean the epidural system:

1. Remove the split septum adapter from the epidural port and connect an empty 50 mL syringe to the luer fitting.
2. Withdraw fluid/air until a vacuum is formed.

   If only clear fluid was injected into the epidural system the cleaning procedure is complete.

   If colored fluid was injected into the epidural system:

   a. Fill a syringe with 50 mL clear distilled water.

   b. Connect the syringe to the epidural port and slowly push clear distilled water into the epidural port.

   c. Slowly withdraw the syringe until no water or air comes out.

d. Disconnect the syringe from the port and discard the water.

3. Place the split septum adapter back on the luer fitting.

Cleaning the Genitourinary System

To clean the genitourinary system:

1. Ensure a urinary catheter is inserted and place the exposed end of the catheter in a basin to catch the fluid.
2. If distilled water tinted with food coloring was used, fill the syringe with 50 mL clear distilled water and flush the water through the GU filling tool connected to the **Urinary** port located on the torso baffle inside the mannequin. Continue to flush clear water through until the waste water is completely clear.
3. Fill the syringe with air and slowly push air through the GU filling tool connected to the **Urinary** port until no more water drains into the basin.
4. Disconnect the GU filling tool from the **Urinary** port and remove the urinary catheter.

Cleaning the Rectum

To clean the rectum:

1. Remove the rectal plug from back of lower torso.
2. Fill a syringe with distilled water and push water through the anus.
3. Repeat as necessary until suppositories are extracted (if applicable).
4. Insert the rectal plug back in place.

Draining Condensation from the Simulator

As part of a regular preventive maintenance schedule, condensation should be drained from the simulator.

Depending on environmental conditions, moisture may condense inside the compressed air lines and tanks within the simulator. It is recommended that this fluid be drained every 40 hours of operation. In outside, high humidity conditions, the system should be drained more frequently.

To drain condensation:

1. Locate the Condensation Drain Hose included with the inventory kit.

The Condensation Drain Hose

2. Bring the hose and a small bucket to the simulator location.
3. Bend right knee to lift the thigh to at least a 45-degree angle.
4. Power on the simulator, but do not start Müse. Allow enough time for the internal compressor to pressurize the system. (The pump will turn off automatically.)
5. Power off the simulator.
6. Place the tubing end of the Condensation Drain Hose into the small bucket and then connect the gray fitting onto the simulator's **EXT AIR** port, located on the left side of the simulator, with a push and twist motion. There will be a sudden release of pressure into the bucket. Any condensation within the system will drain with this exhaust.

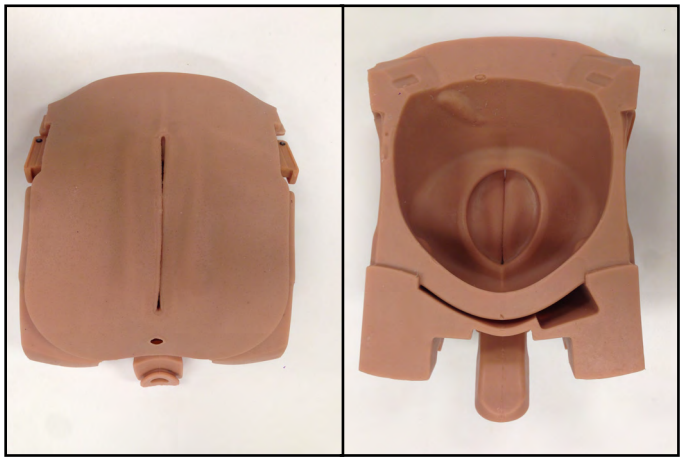
The Battery Compartment and Ports

7. Disconnect the Condensation Drain Hose from the simulator.

Replacing the Standard Birth Canal

Follow these steps to ensure proper removal and installation of the Standard Birth Canal. It is recommended that at least two people perform the procedure.

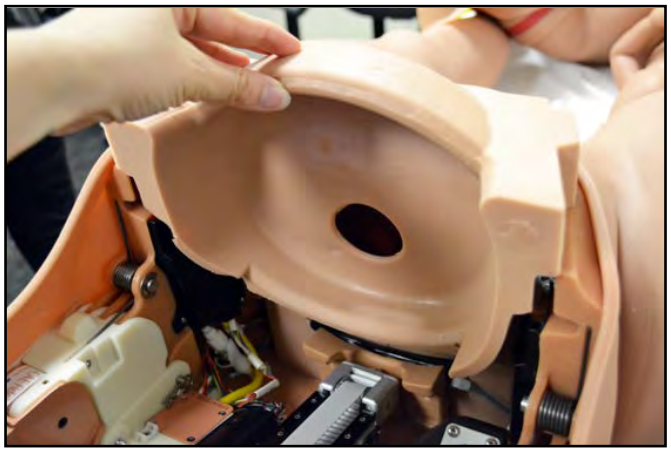
Please read these steps completely prior to beginning procedure.



The Standard Birth Canal - Front and Back View

To remove the birth canal:

1. Remove any installed cervix or backplate.

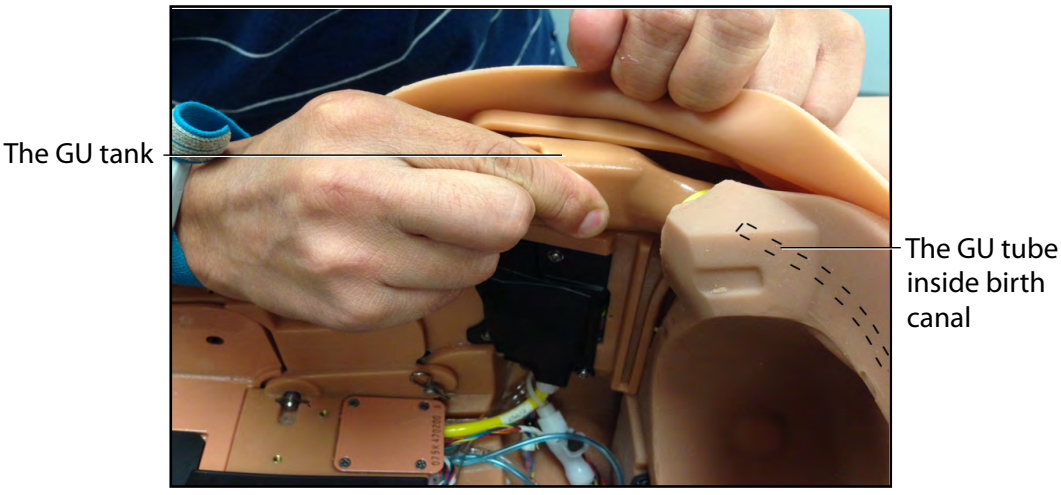


The Uterine Funnel With Dynamic Cervix

2. Remove the screw from the Genitourinary (GU) tank (left side of mannequin torso).

The GU Tank

3. Remove the GU tank from the torso and pull tubing completely out of birth canal.

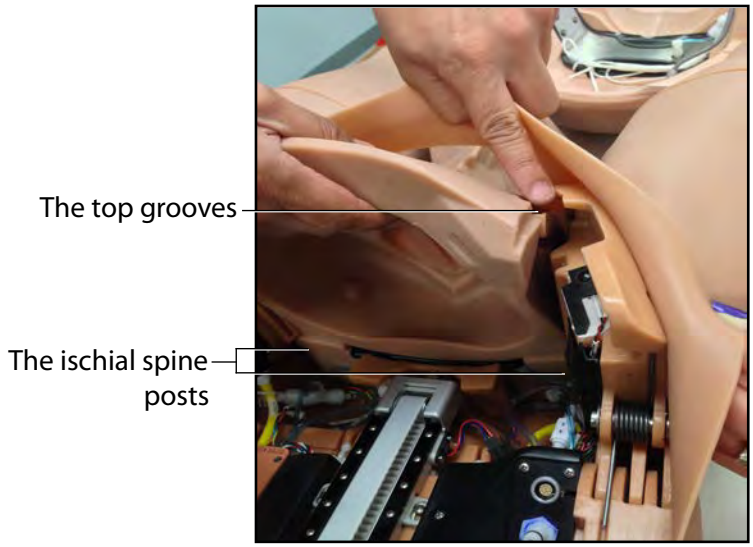


The GU Tank and Tube

NOTE: GU tube outline is for reference only. The GU tube is inserted into the top-left side of the birth canal and runs down and through the birth canal to the exterior GU opening.

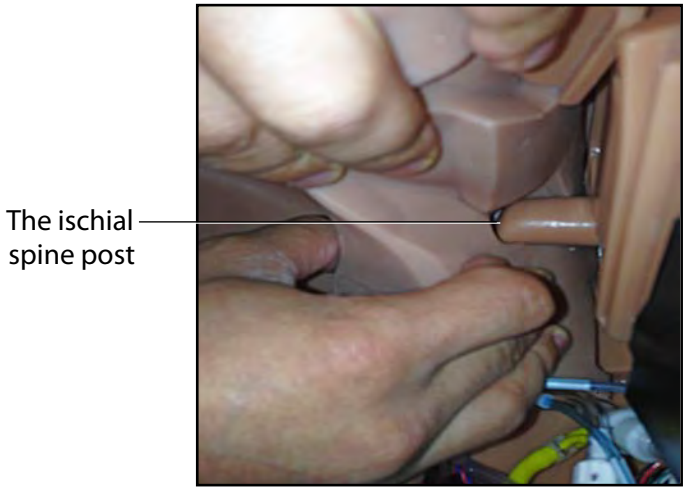
4. Lift and remove the birth canal **top grooves only**, from the left and right sides.

   NOTE: Gently stretch the mannequin skin away from the torso to allow room for birth canal removal.



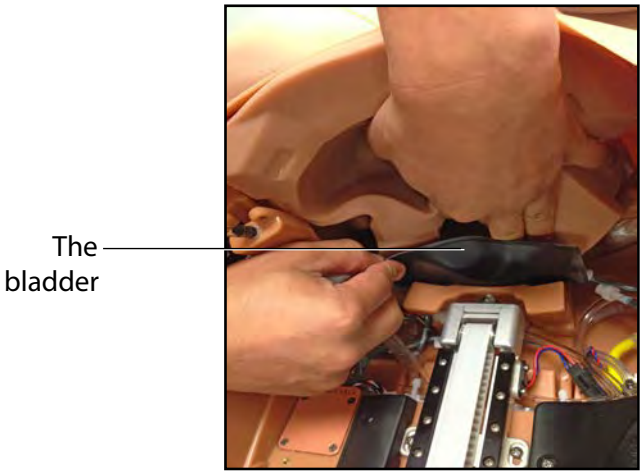
The Birth Canal - Top Grooves

5. Locate the ischial spine posts on the bottom left and right sides of mannequin torso; squeeze and pull the birth canal, one side at a time, to remove completely from the posts.



The Mannequin Torso

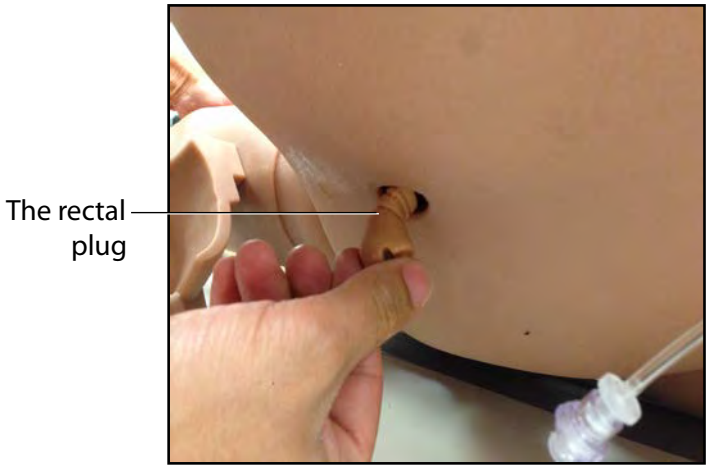
6. Remove the bladder from the inside bottom of birth canal (leaving bladder attached to mannequin torso).



The Mannequin Torso

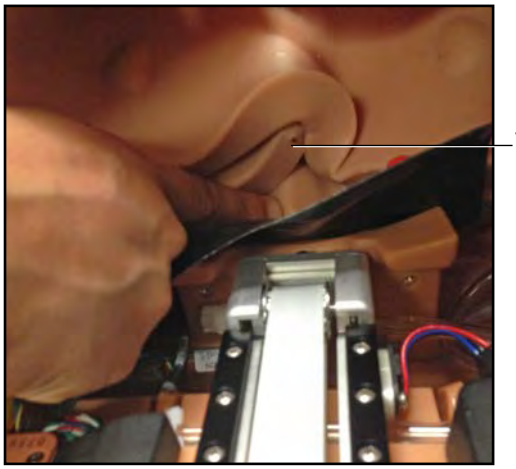
7. Twist and remove the rectal plug from back of lower torso.

   NOTE: Lift mannequin to one side for access to plug.



The Mannequin Torso - Back

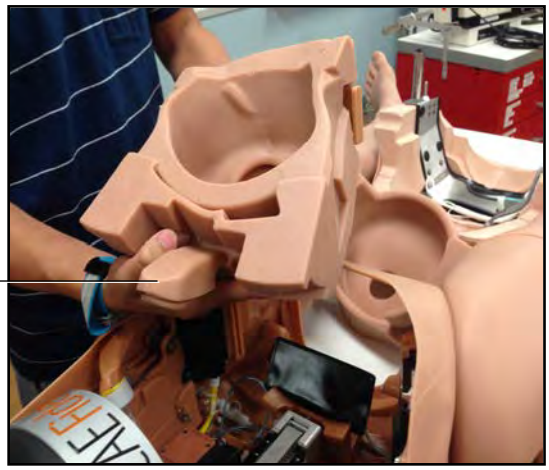
8. Squeeze and remove the rectal extension, located on the bottom center of the birth canal, from the rectal groove.



The Mannequin Torso

9. Lift and remove the birth canal.

   NOTE: Ensure rectal extension is completely removed from the rectal groove before removing the birth canal.



The Birth Canal - Removed

The mannequin with birth canal removed.

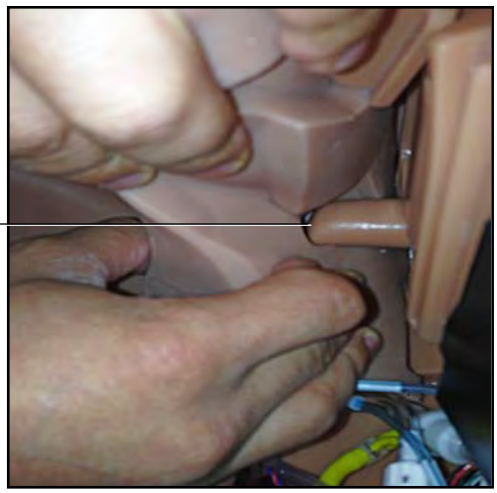
The Mannequin Torso

To install the birth canal:

1. Position the birth canal inside the mannequin torso (ensure exterior of birth canal is facing towards feet and rectal extension is at bottom).

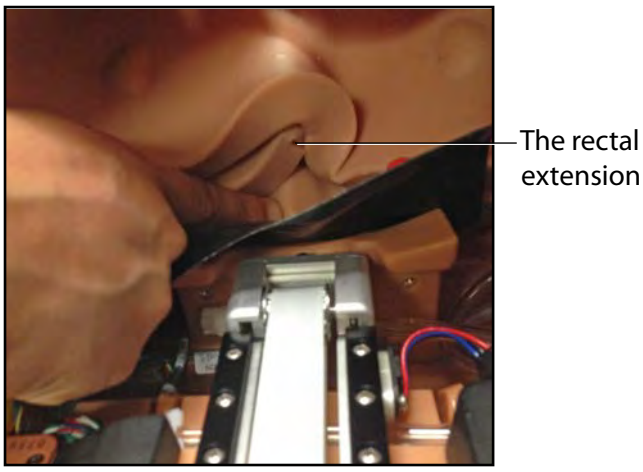
The Mannequin Torso - Birth Canal Placement

2. Locate the ischial spine post on the bottom left or right side of mannequin torso; squeeze and slide one side only of the birth canal completely onto post.



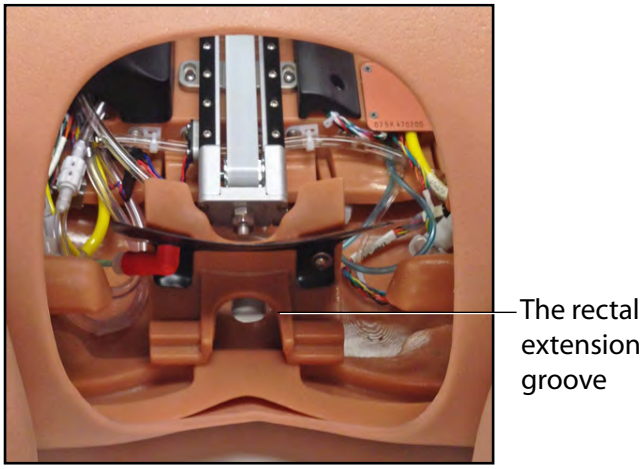
The Mannequin Torso

3. Insert (squeeze and push) the rectal extension, located on the bottom center of the birth canal, completely into the rectal groove.



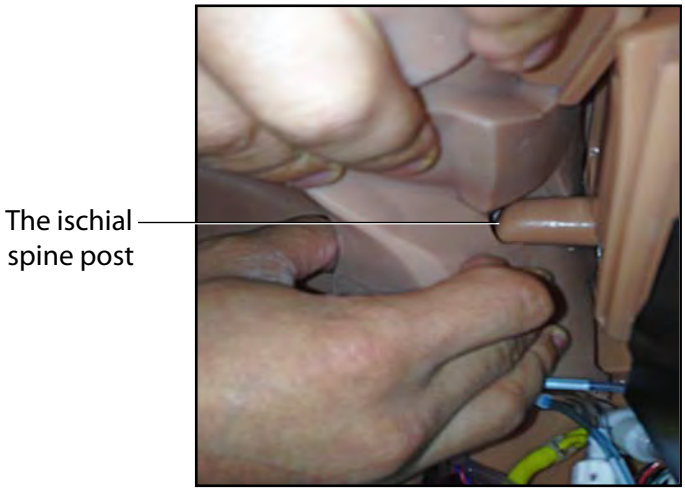
The Mannequin Torso

NOTE: The rectal extension must fit completely into the rectal groove.



The Mannequin Torso

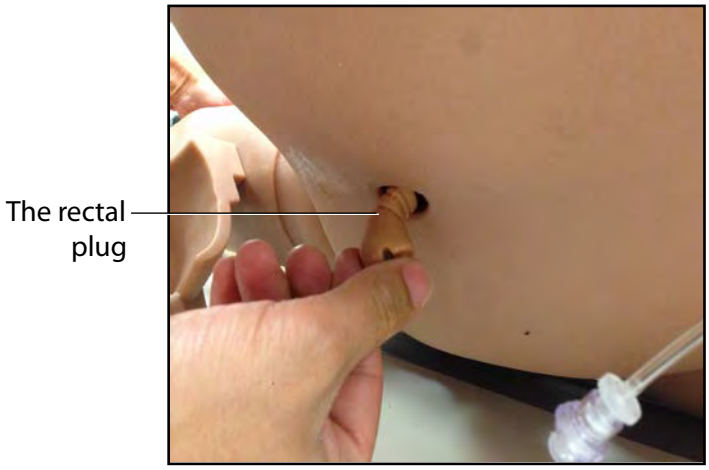
4. Squeeze and slide the remaining side of the birth canal completely onto ischial spine post.



The Mannequin Torso

5. Twist and fully insert the rectal plug (back of lower torso).

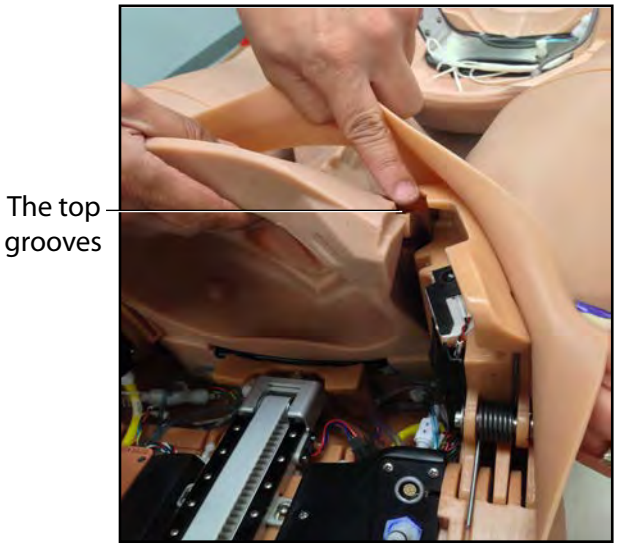
   NOTE: Lift mannequin to one side for access to plug.



The Mannequin Torso - Back

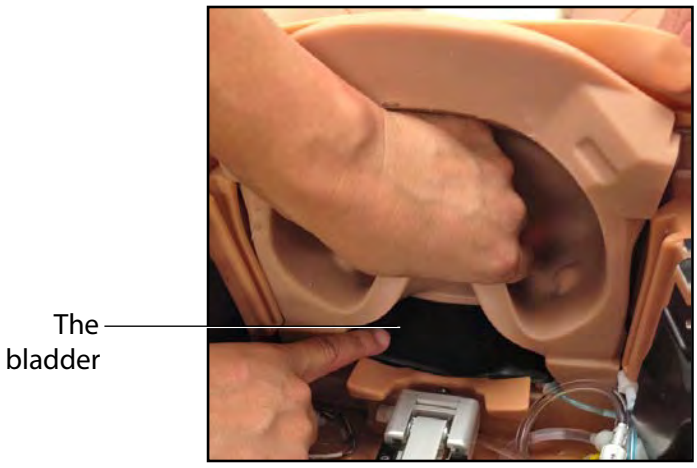
6. Insert the birth canal top grooves into the left and right sides of mannequin.

   NOTE: Gently stretch the mannequin skin away from the torso to allow room for birth canal insertion.



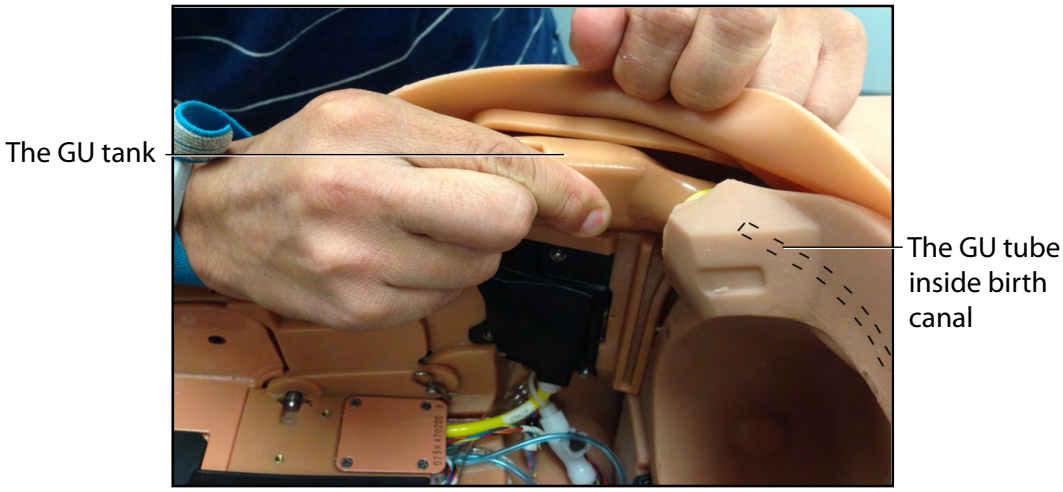
The Birth Canal - Top Grooves

7. Insert the bladder into the inside bottom of birth canal, ensure bladder lays flat.



The Mannequin Torso

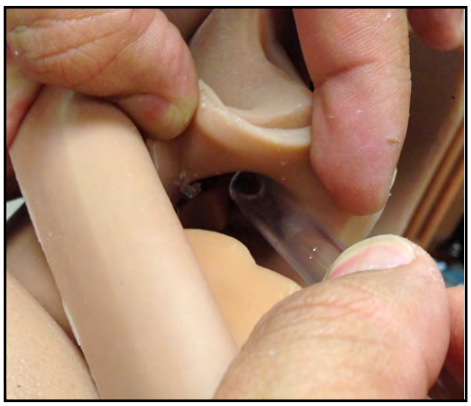
8. Align and insert the GU tank and tubing (left side of mannequin torso). Ensure tubing is fully inserted into birth canal.



The GU Tank and Tube

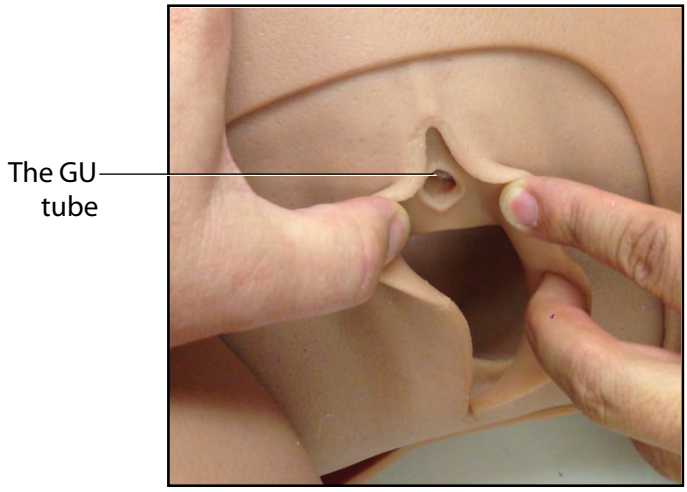
NOTE: GU tube outline is for reference only. The GU tube is inserted into the top-left side of the birth canal and runs down and through the birth canal to the exterior GU opening.

TIP: Lubricate exterior of tubing to help ensure full insertion into birth canal.



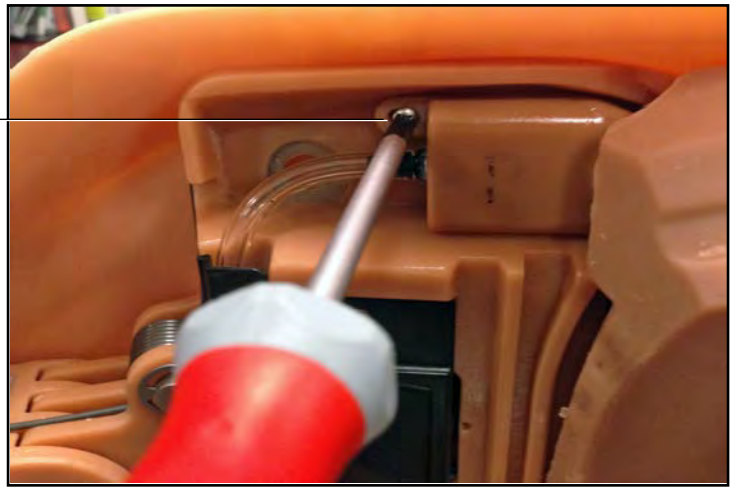
The GU Tank Tube Insertion

NOTE: The end of the GU tubing should be visible from exterior of birth canal at vaginal opening.



The Birth Canal - Exterior View

9. Align the GU tank to the mannequin torso and insert screw.



The GU Tank

Ensure the birth canal is completely and securely attached to all fittings.

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Condition Guidelines for Programming MFS with Müse

This section is intended to help you select Müse conditions to achieve desired vital signs within each programmed state. All four conditions should be programmed into each state in the order presented below:

Respiratory: Desaturation

Cardiovascular: Blood Pressure

Cardiovascular Heart Rate

Respiratory: Respiratory Rate

The Müse software is physiologically driven. When using multiple conditions (e.g., Desaturation + Hypertension + Tachycardia + Tachypnea), physiological regulatory mechanisms such as the baroreceptor reflex and ventilatory control cause compensatory changes within parameters. To achieve the desired vital sign, select one condition level, above (greater) or below (less), to achieve the desired physiological effect.

Respiratory: Desaturation

Desaturation	SpO_2 Value
Reset	98%
High 90s	96-97%
Mid 90s	94-96%
Low 90s	91-93%
High 80s	87-90%
Mid 80s	84-86%
Low 80s	80-83%
High 70s	77-80%
Mid 70s	74-77%
Low 70s	69-71%
Less than 70	<69%

Cardiovascular: Blood Pressure

Hypertension		Hypotension	
Reset	110s/70s	Reset	110s/70s
Increased	120s/80s	Decreased	100s/70s
Pre-Borderline	130s/80s	Pre-Borderline	100s/60s
Borderline	140s/90s	Borderline	90s/50s
Mild	150s/90s	Mild	80s/40s
Moderate	160s/100s	Moderate	70s/40s
Severe	170s/100s	Severe	60s/30s
Profound	190s/110s	Profound	50s/30s
Extreme	220s/120s	Extreme	40s/30s

Cardiovascular: Heart Rate

Tachycardia		Bradycardia	
Reset	70s	Reset	70s
Increased	High 70s	Decreased	Mid 60s
Elevated	80s	Pre-Borderline	Low 60s
Pre-Borderline	90s	Borderline	Mid 50s
Borderline	100s	Intermediate	Low 50s
Intermediate	110s	Mild	High 40s
Mild	120s	Moderate	Mid 40s
Moderate	130s	Severe	Low 40s
Severe	140s	Extreme	Mid 30s
Supra	150s	Acute	Low 30s
Profound	160s		
Extreme	170s		
Acute	High 170s		

Respiratory: Respiratory Rate

Tachypnea		Bradypnea	
Reset	11	Reset	11
Increased	15	Increased	10
Elevated	18	Intermediate	9
Borderline	20	Mild	7
Intermediate	22	Moderate	6
Mild	25	Severe	5
Moderate	28	Profound	3
Severe	31	Extreme	2
Profound	33		
Extreme	36		

Müse Parameter Descriptions

Neurological - Parameters

The maternal fetal simulator can simulate a variety of neurological clinical indicators.

Neurological Parameters
Apply to Both Eyes
Eyes: Pupil Control
Eyes: Blinking
Eyes: Blink Speed
Reactive Pupils
Light Reactivity Speed
Seizures
ICP
NMB
Temperature: Body
Temperature: Blood

Eyes: Pupil Control

The pupil control parameters are used to control the diameter of the pupils in the eyes. Each eye has reactive pupils and functional eyelids that blink.

Currently, there are three pupil options that are used to control the diameter of the pupils in both eyes: Pinpoint, Blown or a Fixed Pupil Size (3 mm to 8 mm).

Default: 5 mm

Eyes: Blinking

In **Auto** mode the eyes are normally blinking. However, the eyes will automatically close under any of the following conditions:

- SpO2 < 75%
- Spontaneous minute ventilation < 1500 mL
- Neuromuscular blockade (NMB) > 30%
- Non-pulsatile cardiac rhythm

The **Blinking** and **Closed** settings allow the user to have one or both eyes either blinking or closed and override the automatic response.

Default: Auto

Eyes: Blink Speed

The **Blink Speed** parameter controls the eyelid blinking frequency and can be set to **Slow**, **Normal**, **Fast** or **Rapid**. Presently, blinking frequency is not linked to the physiological models. However, the response can be done "on the fly" or scripted using the Scenario Designer.

Default: Normal

Reactive Pupils

The **Reactive pupils** parameter determines whether pupils re-size in response to changes in light. When **Yes** is selected, pupils re-size in response to changes in light and when **No** is selected they do not.

Default: Yes

Light Reactivity Speed

The **Light Reactivity Speed** parameter determines the speed at which the eyes react to light when the **Reactive pupils** parameter is set to **Yes**. **Light Reactivity Speed** can be set to **Sluggish** or **Brisk**.

Default: Brisk

Seizures

The **Seizures** parameter is used to simulate the presence of seizures. They are either **On** or **Off**.

Default: Off

Intracranial Pressure (ICP)

The ICP parameter is used to set the ICP displayed as a numeric value on Patient Status Display and on the TouchPro Patient monitor. The value is **Modeled** by default.

Default: Modeled

Range: 0 mmHg - 65.0 mmHg

Neuromuscular Blockade (NMB)

The pharmacokinetic and pharmacodynamic models based on the neuromuscular blocking agents administered and the time course of their injection automatically determines the degree of NMB. For some educational applications, however, the instructor may wish to set a fixed degree of neuromuscular blockade that remains stable for an indefinite period. This can be accomplished using the **NMB** parameter. The default setting instructs the pharmacologic models to determine the degree of neuromuscular blockade based upon the drugs injected and their pharmacologic properties.

When a numeric value is assigned to this parameter, the degree of NMB is set to that level. For example, 80% NMB causes the simulator to set the degree of NMB to 80%, regardless of the presence (or absence) of neuromuscular blocking drugs. Clinically, the spontaneous tidal volume is markedly reduced. If NMB is set to greater than 30%, the eyes will automatically close when in the Auto mode.

Default: Modeled

Range: 0% - 100%

Temperature: Body

The temperature measured at the body surface can be set using this parameter and can be displayed on the Patient Status Display and TouchPro software.

The body temperature is not linked to the physiologic models. However, changes can be made "on the fly" or scripted using the Scenario Designer.

Default: 36.5° C

Range: 32.0° C - 42.0° C

Temperature: Blood

The arterial blood temperature can be set using the **Temperature: Blood** parameter. The arterial blood temperature can then be displayed on the Patient Status Display and TouchPro software. Note that changes in arterial temperature may alter the position of the standard oxyhemoglobin dissociation curve (shift). As temperature increases or pH decreases, more oxygen is released from hemoglobin and thus the patient's saturation decreases. The inverse is also true.

Default: 37° C

Range: 32.0° C - 42.0° C

Respiratory – Basic Parameters

Respiratory Parameters
Bronchial Occlusion(Left and Right)
Respiratory Rate
Respiratory Rate Factor
Shunt Fraction
SpO_2
NMB
Tidal Volume
Fraction of Inspired O_2

Bronchial Occlusion (Left and Right)

Turning on the **Bronchial Occlusion** parameter completely obstructs the right or left bronchi, simulating a lower airway obstruction (e.g., mucus plug).

Right and left bronchi can be occluded individually.

Default: Off

Respiratory Rate

The **Respiratory Rate** parameter is used to set the respiratory rate to a given number of breaths per minute. Once set, arterial oxygen and carbon dioxide values have no effect on the resulting respiratory rate, but continue to influence other components of the physiological models. The patient continues to breathe at the set number of breaths per minute, regardless of the arterial oxygen or carbon dioxide levels.

For example, when the respiratory rate is set to 10 breaths per minute, the respiratory rate remains at 10 breaths per minute, regardless of arterial oxygen or carbon dioxide levels. In such situations, the patient can only respond to arterial oxygen or carbon dioxide levels when the **Tidal Volume** parameter is adjusted.

Default: Modeled

Range: 4 breaths per minute - 40 breaths per minute

Respiratory Rate Factor

The **Respiratory Rate Factor** parameter (along with the **Tidal Volume Factor** parameter) is used to change the baseline respiratory rate (before the control-of-breathing and drug influences are taken into account). A value of 2 doubles the baseline respiratory rate. A value of 0.5 decreases the baseline respiratory rate by 50%. Changing the respiratory rate using this parameter maintains the physiological models.

Default: 1

Range: 0.01 - 6.00

TIP: First decrease the respiratory gain factor to reduce the influence of the respiratory control mechanism on the respiratory rate and tidal volume.

Shunt Fraction

The **Shunt Fraction** parameter is frequently used to assist in desaturating a patient. This parameter creates a physiologic "bypass" of the normal pulmonary circulation, resulting in changes in O_2, CO_2 and anesthetic gases at the alveolar level. Typically, values of 0.1 to 0.4 are needed to create large alveolar-arterial oxygen gradients sufficient to cause arterial hypoxemia.

Default: 0.02

Range: 0.00 - 0.50

TIP: If the parameter is set high (0.5), the patient desaturates rapidly and responds negatively to the administration of supplemental O_2.

SpO_2

The SpO_2 parameter is used to override the normal pulmonary circulation and set the SpO_2 at a fixed numeric value, regardless of the oxygen applied. Resetting to **Modeled** returns control of the underlying SpO_2 to the physiological models. If SpO_2 is set to less than 75%, the eyes will automatically close when in the Auto mode.

Default: Modeled

Range: 0% - 100%

Neuromuscular Blockade (NMB)

The degree of NMB is automatically determined by pharmacokinetic and pharmacodynamic models, which are based on the neuromuscular blocking agents administered and the time course of their injection. For some educational applications, however, the instructor may wish to set a fixed degree of neuromuscular blockade that remains stable for an indefinite period. This can be accomplished using the **NMB** parameter. The default setting instructs the pharmacologic models to determine the degree of neuromuscular blockade based upon the drugs injected and their pharmacologic properties.

When a numeric value is assigned to this parameter, the degree of NMB is set to that level. For example, 80% NMB causes the simulator to set the degree of NMB to 80%, regardless of the presence (or absence) of neuromuscular blocking drugs. Clinically, the spontaneous tidal volume is markedly reduced. If NMB is set to greater than 30%, the eyes will automatically close when in the Auto mode.

Default: Modeled

Range: 0% - 100%

Tidal Volume

The **Tidal Volume** parameter is used to set the tidal volume to a given volume per breath. Once Tidal Volume is set to a numeric value, arterial oxygen and carbon dioxide values have no effect on the tidal volume, but continue to influence other components of the physiological models.

For example, with the tidal volume set to 600 mL in the adult simulator, the tidal volume remains a constant (set) 600 mL even in the event of falling arterial oxygen levels. In such situations, the patient can only respond to arterial oxygen or carbon dioxide levels when the respiratory rate is adjusted.

Default: Modeled

Range: 0 mL- 2500 mL

Intrapleural Volume (Vol): (Left and Right)

The **Intrapleural Vol** parameters allow intrapleural volume to accumulate, for example, as happens during pneumothorax, hydrothorax or hemothorax.

To simulate a pneumothorax, set the corresponding **Intrapleural Vol** to a value greater than 0 mL. Values more than 1500 mL reduce the corresponding lung volume significantly. Breath sounds and chest rise are automatically diminished on the appropriate side due to decreased ventilation of the affected lung.

Default: 0

Range: 0 mL - 2500 mL

Fraction of Inspired O_2 (FiO_2)

This parameter is used to simulate changes in the **FiO_2,** such as would occur with the administration of supplemental oxygen.

Default: 21%

Range: 0% - 100%

Respiratory – Additional Parameters

Respiratory Parameters – Additional
Respiratory Rate
Tidal Volume
Tidal Volume Factor
pH Shift
PEEP
O_2 Consumption
CO_2 Production Factor
$PaCO_2$ Set-point
PaO_2 Set-point
I to E Ratio (1:X)
$PetCO_2$-$PaCO_2$ Factor
Respiratory Gain Factor
Respiratory Quotient
Volume/Rate Control Factor
Chest Wall Capacity
Chest Wall Compliance Factor
Distended Chest Wall Compliance Factor
Functional Residual Capacity
Lung Compliance Factor: Left Lung Compliance Factor: Right
Venous CO_2 Shift

Respiratory Parameters – Additional
Bronchial Resistance Factor: Left
Bronchial Resistance Factor: Right
Alveolar Enflurane
Fraction of Inspired Enflurane
Alveolar Halothane
Fraction of Inspired Halothane
Alveolar Isoflurane
Fraction of Inspired Isoflurane
Alveolar Nitrous Oxide
Fraction of Inspired Nitrous Oxide
Alveolar Sevoflurane
Fraction of Inspired Sevoflurane

Respiratory Rate

The **Respiratory Rate** parameter is used to set the respiratory rate to a given number of breaths per minute. Once set, arterial oxygen and carbon dioxide values have no effect on the resulting respiratory rate, but continue to influence other components of the physiological models. The patient continues to breathe at the set number of breaths per minute, regardless of the arterial oxygen or carbon dioxide levels.

For example, when the respiratory rate is set to 10 breaths per minute, the respiratory rate remains at 10 breaths per minute, regardless of arterial oxygen or carbon dioxide levels. In such situations, the patient can only respond to arterial oxygen or carbon dioxide levels by adjusting the **Tidal Volume** parameter.

Default: Modeled

Range: 4 breaths per minute - 40 breaths per minute

Tidal Volume

The **Tidal Volume** parameter is used to set the tidal volume to a given volume per breath. Once tidal volume is set to a numeric value, arterial oxygen and carbon dioxide values have no effect on the tidal volume, but continue to influence other components of the physiological models.

For example, with the tidal volume set to 600 mL in the adult simulator, the tidal volume remains a constant (set) 600 mL even in the event of falling arterial oxygen levels. In such situations, the patient can only respond to arterial oxygen or carbon dioxide levels when the respiratory rate is adjusted.

Default: Modeled

Range: 0 mL - 2500 mL

Tidal Volume Factor

The **Tidal Volume Factor** (along with the **Respiratory Rate Factor**) parameter is used to change the baseline tidal volume (before the control-of-breathing and drug influences are taken into account.) A value of 2 doubles the baseline tidal volume. A value of 0.5 decreases the baseline tidal volume by 50%.

Default: 1

Range: 0.10 - 4.00

TIP: First decrease the respiratory gain factor to reduce the influence of the respiratory control mechanism on the respiratory rate and tidal volume.

pH Shift

The **pH Shift** parameter is used to create a metabolic acidosis or metabolic alkalosis under script control.

The default pH value displayed on the Patient Status Display or TouchPro software is dependent on respiratory arterial CO_2 values. Under default conditions ($PaCO_2$ = 40 mmHg), the pH is approximately 7.4. Rising arterial CO_2 produces a subsequent drop in pH, while falling arterial CO_2 levels result in rising pH values.

To simulate pH changes with metabolic changes (acidosis or alkalosis), the **pH Shift** value is a mathematical addition to (or subtraction) from the displayed pH value to that which is desired.

Default: 0

Range: -(0.50) - 0.50

Positive End Expiratory Pressure (PEEP)

The PEEP parameter specifies the amount of positive end expiratory pressure applied during mechanical ventilation. Setting this parameter results in clinically appropriate intrathoracic pressures and hemodynamic responses.

Default: 0.0 cmH_2O

Range: 0.0 cmH_2O - 25.0 cmH_2O

O_2 Consumption

The **O_2 Consumption** parameter is used to change the rate of consumption of oxygen and production of carbon dioxide. When **O_2 Consumption** is increased and used with increased **Shunt Fraction**, profound levels of hypoxia can be achieved rapidly.

Default: 250 mL per minute

Range: 0 mL per minute - 2000 mL per minute

CO_2 Production Factor

The **CO_2 Production Factor** parameter allows for the manipulation of metabolic CO_2 production to simulate a variety of pathophysiological conditions. CO_2 production is determined by the **O_2 Consumption** and **Respiratory Quotient** settings. A CO_2 Production Factor value of 2 doubles the CO_2 production, while a value of 0.5 decreases the CO_2 production by 50%.

Default: 1

Range: 0.50 - 4.00

$PaCO_2$ Set-point

The **$PaCO_2$ Set-point** parameter is a set-point for $PaCO_2$. The control-of-breathing model adjusts tidal volume and respiratory rate in order to bring the $PaCO_2$ toward this set-point. Factors that influence the success of this control effort include baseline tidal volume, baseline respiratory rate, respiratory gain, O_2 consumption, respiratory quotient, lung compliances, chest wall compliance, bronchial resistances, the presence of artificial airways in the simulator and the inspired gas mixture.

When the **$PaCO_2$ Set-point** is set to a new value, the physiological controls adjust the simulator's respiratory pattern in an attempt to attain the desired set-point. For example, when the set-point is raised from 40 to 50 mmHg, there is a transitory decrease in respiratory rate and tidal volume, as the physiological controls attempt to drive the $PaCO_2$ toward 50 mmHg. When the $PaCO_2$ reaches the new set-point, the simulator's respiratory rate and tidal volume should return to normal values.

Default: 40 mmHg

Range: 20.0 mmHg - 70.0 mmHg

PaO_2 Set-point

The **PaO_2 Set-point** parameter is a set-point for PaO_2. When PaO_2 is below the set-point value, progressive stimulation of spontaneous minute ventilation occurs. Both tidal volume and respiratory rate rise, which under appropriate conditions results in PaO_2 moving closer to the set-point. Factors that influence this control effort include baseline tidal volume, baseline respiratory rate, respiratory gain, O_2 consumption, respiratory quotient, lung compliances, chest wall compliance, bronchial resistances, the presence of artificial airways in the simulator and the inspired gas mixture. Minute ventilation is not affected for PaO_2 above the set-point.

For example, if **PaO_2 Set-point** is set to 100 mmHg and PaO_2 drops to 90 mmHg, ventilatory stimulation occurs. When the PaO_2 reaches the new set-point, the simulator's respiratory rate and tidal volume are again controlled to maintain $PaCO_2$ at the $PaCO_2$ set-point. Also, see **$PaCO_2$ Set-point**.

Default: 100.00 mmHg

Range: 20.0 mmHg - 100.0 mmHg

I to E Ratio (1:X)

The **I to E Ratio (1:X)** parameter sets the inspiratory-expiratory (I:E) ratio for spontaneous ventilation. At the default setting, the time for exhalation is twice that of inhalation.

Default: 2

Range: 0.5 - 7.0

$PetCO_2$ - $PaCO_2$ Factor

The **$PetCO_2$ - $PaCO_2$ Factor** adjusts the end-tidal CO_2 relative to the $PaCO_2$. At the default value of 1, $PetCO_2$ very closely approximates $PaCO_2$. When **$PetCO_2$ - $PaCO_2$ Factor** is set at a value of 2, $PetCO_2$ is approximately one half of $PaCO_2$. $PetCO_2$ depends on CO_2 production and alveolar ventilation. Because the alveolar dead space is not modeled physically in the hardware, the responses to changes in mechanical ventilation settings may not be exact. The use of the Onset feature (e.g., onset over a 1-minute period) is recommended for this parameter.

Default: 1

Range: 0.9 - 10.0

Respiratory Gain Factor

The **Respiratory Gain Factor** determines how strong an influence arterial CO_2 levels have on the simulated patient's tidal volume and respiratory rate. Under default conditions (value = 1), when arterial CO_2 levels rise, the patient's respiratory rate and tidal volume show a transitory increase in an attempt to return the patient to the physiological control CO_2 set-point. If the **Respiratory Gain Factor** is increased to more than 1, the patient has a more pronounced response, while values less than 1 correspond to a blunted response.

Default: 1

Range: 0.00 - 10.00

Respiratory Quotient

Respiratory Quotient is the rate of carbon dioxide production divided by the rate of oxygen consumption. Changes to the **Respiratory Quotient** parameter alter the rate of carbon dioxide production relative to the rate of oxygen consumption.

Default: 0.8

Range: 0.70 - 1.10

Volume/Rate Control Factor

Ventilatory responses to increased arterial carbon dioxide or decreased arterial oxygen may take the form of increased tidal volume, increased respiratory rate, or both. The **Volume/Rate Control Factor** determines these relative changes. At a value of 1, increased and decreased ventilatory drive affect tidal volume and respiratory rate equally. When the **Volume/Rate Control Factor** is greater than 1, increased or decreased minute ventilation is predominantly achieved by changes in tidal volume. When the **Volume/Rate Control Factor** is less than 1, ventilatory changes are affected primarily by changes in respiratory rate.

For example, set the **Volume/Rate Control Factor** to 0.1 and increase the shunt fraction to 0.4 to decrease the arterial O_2. The patient responds to falling arterial oxygen levels with increased minute ventilation. Increasing the respiratory rate with minimal increase in tidal volume produces this.

Default: 1

Range: 0.1 - 10.0

Chest Wall Capacity

The **Chest Wall Capacity** parameter sets the total (combined) intrapleural and lung volumes at which the chest wall is considered distended. Also, see **Chest Wall Compliance Factor** and **Distended Chest Wall Compliance Factor**.

Default: 3900

Range: 1500 - 3900

Chest Wall Compliance Factor

This **Chest Wall Compliance Factor** parameter describes the interaction of the chest wall with the lungs. The **Chest Wall Compliance Factor** parameter defines the volume-pressure relationship in the normal operating lung volumes. Once distended, however, the chest wall rapidly becomes much less compliant (i.e., much "stiffer") and resistant to further inflation.

Default: 1

Range: 0.15 - 10.00

Distended Chest Wall Compliance Factor

The **Distended Chest Wall Compliance Factor** parameter, along with the **Chest Wall Compliance Factor** parameter, describes the interaction of the chest wall with the lungs. The **Chest Wall Compliance Factor** parameter defines the volume-pressure relationship in normal lung volumes. Once distended, however, the chest wall rapidly becomes much "stiffer" and resistant to further inflation. Also, see **Chest Wall Compliance Factor**.

The **Distended Chest Wall Compliance Factor** parameter must be set to a low value for increased intrapleural volumes to result in elevated inspiratory pressures with positive pressure ventilation. Also, see **Intrapleural Volume (Vol): (Left and Right).**

Default: 1

Range: 0.10 - 10.00

Functional Residual Capacity

The **Functional Residual Capacity** parameter sets the combined left and right lung volume remaining at the end of a normal, spontaneous exhalation. This parameter influences the speed of desaturation during apnea.

Default: 2300 mL

Range: 500 mL - 4000 mL

Lung Compliance Factor: (Left and Right)

These two parameters independently set the left and right lung compliance. **Lung Compliance Factor** determines how easily the lungs inflate. Low compliance factors (less than 1) create "stiff" lungs (such as in acute respiratory distress syndrome or pulmonary edema) requiring more pressure for expansion. High compliance factors (greater than 1) create "loose" lungs that easily inflate with less pressure.

Default: 1

Range: 0.15 - 10.00

Venous CO_2 Shift

The **Venous CO_2 Shift** parameter affects the partial pressure of CO_2 in the venous blood. Changing this parameter allows large and rapid shifts in total body CO_2 concentration. Increases in alveolar and arterial CO_2 follow rapidly in a physiologically correct magnitude and time course.

This parameter is useful for giving a "bolus" of CO_2 to the venous system. The alveolar and arterial CO_2 levels rise rapidly in response to the added carbon dioxide but soon return to "pre-bolus" levels as increased ventilation efforts work to eliminate the added CO_2. Therefore, the rise in CO_2 levels is only transitory. This parameter can be used to simulate external CO_2 administration such as that used during laparoscopy.

Default: 0 mmHg

Range: 0.0 mmHg - 60.0 mmHg

Bronchial Resistance Factor (Left and Right)

The **Bronchial Resistance Factor** parameter can be used to set the rate of left and right bronchial resistance individually. The rate of resistance can also be set to occur over time.

Default: 1

Range: 0.00 - 250,000.00

Alveolar Enflurane

The **Alveolar Enflurane** parameter is used to simulate the presence of enflurane in the alveolar space without using real anesthetic vapors. The enflurane percentage is input to the drug models to achieve the expected pharmacodynamic effects (e.g., respiratory depression).

Using this parameter bypasses pharmacokinetics, real and instructor-specified inspired fractions, venous content, lung perfusion and ventilation. This parameter can be used to focus on cardiorespiratory effects (pharmacodynamics).

NOTE: Müse does not verify a 100 % sum of all fractions, because this would require all fractions to be set.

Default: Modeled

Range: 0.00% - 5.00%

Fraction of Inspired Enflurane

The **Fraction of Inspired Enflurane** parameter is used to simulate the amount of enflurane set in the anesthetic vaporizer and is used to calculate alveolar enflurane.

This parameter has a faster effect on physiology than anesthesia machine settings, because mixing in the breathing circuit is not simulated.

NOTE: Müse does not verify a 100 % sum of all fractions, because this would require all fractions to be set.

Default: 0%

Range: 0.00% - 5.00%

Alveolar Halothane

The **Alveolar Halothane** parameter is used to simulate the presence of halothane in the alveolar space without using real anesthetic vapors. The halothane percentage is input to the drug models to achieve the expected pharmacodynamic effects (e.g., respiratory depression).

Using this parameter bypasses pharmacokinetics, real and instructor-specified inspired fractions, venous content, lung perfusion and ventilation. This parameter can be used to focus on cardiorespiratory effects (pharmacodynamics).

NOTE: Müse does not verify a 100 % sum of all fractions, because this would require all fractions to be set.

Default: Modeled

Range: 0.00% - 5.00%

Fraction of Inspired Halothane

The **Fraction of Inspired Halothane** parameter is used to simulate the amount of halothane set in the anesthetic vaporizer and is used to calculate alveolar halothane.

This parameter has a faster effect on physiology than anesthesia machine settings, because mixing in the breathing circuit is not simulated.

NOTE: Müse does not verify a 100% sum of all fractions, because this would require all fractions to be set.

Default: 0%

Range: 0.00% - 5.00%

Alveolar Isoflurane

The **Alveolar Isoflurane** parameter is used to simulate the presence of isoflurane in the alveolar space without using real anesthetic vapors. The isoflurane percentage is input to the drug models to achieve the expected pharmacodynamic effects (e.g., respiratory depression).

Using this parameter bypasses pharmacokinetics, real and instructor-specified inspired fractions, venous content, lung perfusion and ventilation. This parameter can be used to focus on cardiorespiratory effects (pharmacodynamics).

NOTE: Müse does not verify a 100 % sum of all fractions, because this would require all fractions to be set.

Default: Modeled

Range: 0.00% - 5.00%

Fraction of Inspired Isoflurane

The **Fraction of Inspired Isoflurane** parameter is used to simulate the amount of isoflurane set in the anesthetic vaporizer and is used to calculate alveolar isoflurane.

This parameter has a faster effect on physiology than anesthesia machine settings, because mixing in the breathing circuit is not simulated.

NOTE: Müse does not verify a 100 % sum of all fractions, because this would require all fractions to be set.

Default: 0%

Range: 0.00% - 5.00%

Alveolar Nitrous Oxide

The **Alveolar Nitrous Oxide** parameter is used to simulate the amount of nitrous oxide set in the anesthetic vaporizer and is used to calculate alveolar nitrous oxide.

Using this parameter bypasses pharmacokinetics, real and instructor-specified inspired fractions, venous content, lung perfusion and ventilation. This parameter can be used to focus on cardiorespiratory effects (pharmacodynamics).

NOTE: Muse does not verify a 100 % sum of all fractions, because this would require all fractions to be set.

Default: 0.00%

Range: 0.00% - 80.0%

Fraction of Inspired Nitrous Oxide

The **Fraction of Inspired Nitrous Oxide** parameter is used to simulate the amount of nitrous oxide set in the anesthetic vaporizer and is used to calculate alveolar nitrous oxide.

This parameter has a faster effect on physiology than anesthesia machine settings, because mixing in the breathing circuit is not simulated.

NOTE: Müse does not verify a 100 % sum of all fractions, because this would require all fractions to be set.

Default: 0%

Range: 0.00% - 80.0%

Alveolar Sevoflurane

The **Alveolar Sevoflurane** parameter is used to simulate the presence of sevoflurane in the alveolar space without using real anesthetic vapors. The sevoflurane percentage is input to the drug models to achieve the expected pharmacodynamic effects (e.g., respiratory depression).

Using this parameter bypasses pharmacokinetics, real and instructor-specified inspired fractions, venous content, lung perfusion and ventilation. This parameter can be used to focus on cardiorespiratory effects (pharmacodynamics).

NOTE: Müse does not verify a 100% sum of all fractions, because this would require all fractions to be set.

Default: Modeled

Range: 0.00% - 8.00%

Fraction of Inspired Sevoflurane

The **Fraction of Inspired Sevoflurane** parameter is used to simulate the amount of sevoflurane set in the anesthetic vaporizer and is used to calculate alveolar sevoflurane.

This parameter has a faster effect on physiology than anesthesia machine settings, because mixing in the breathing circuit is not simulated.

NOTE: Müse does not verify a 100 % sum of all fractions, because this would require all fractions to be set.

Default: 0%

Range: 0.00% - 8.00%

Cardiovascular – Basic Parameters

Cardiovascular Parameters – Basic
Blood Pressure
Heart Rate
Heart Rate Factor
Cardiac Rhythm
Arterial Catheter
Central Venous Catheter
PA Catheter
PA Balloon
Defib
Pacing Current
Pacing Rate
Pacing Capture Threshold
Cold Fluid Inject

Blood Pressure

The **Blood Pressure** parameter is used to override the physiological modeling for blood pressure. The systolic and diastolic blood pressures can both be set to fixed numeric values, regardless of interventions performed. Resetting the parameter to **Modeled** returns control of the underlying blood pressure to the physiological models.

Default: Modeled

Range: Systolic 20 mmHg - 300 mmHg

Diastolic 10 mmHg - 300 mmHg

Heart Rate

The **Heart Rate** parameter is used to set the heart rate to a given (fixed) number of beats per minute. Once the heart rate is set to a numeric value, administered drugs or intravascular volume changes have no effect on the heart rate, but continue to influence other components of the physiological models. Use this parameter to "fix" or set the heart rate to a specific number.

Default: Modeled

Range: 30 beats per minute - 220 beats per minute

Heart Rate Factor

The **Heart Rate Factor** parameter is used to change the baseline heart rate before physiological controls are taken into account. A value of 2 doubles the baseline heart rate, while a value of 0.5 decreases the heart rate by 50%. Use this parameter to raise or lower the heart rate.

Default: 1

Range: 0.10 - 4.00

Cardiac Rhythm

The **Cardiac Rhythm** parameter is used to change the patient's underlying cardiac rhythm displayed on the Patient Status Display or TouchPro patient monitor. To change the cardiac rhythm, click the **Cardiac Rhythm** parameter and select the desired rhythm from the available list. If a number appears following the cardiac rhythm on the list, this overrides the heart rate to the rate indicated.

For cardiac rhythms without a number, the **Heart Rate Factor** parameter can be used to independently control the heart rate.

Default: Modeled

Options: Modeled

Asystole

Atrial Enlargement, Left

Atrial Enlargement, Right

Atrial Fibrillation

Atrial Fibrillation: HR 120

Atrial Fibrillation: HR 80

Atrial Flutter

Atrial Flutter: HR 150

Atrial Tachycardia

AV Block, First-Degree

AV Block, Second-Degree - Mobitz I

AV Block, Second-Degree - Mobitz II

AV Block, Third-Degree

Bundle Branch Block, Incomplete Right

Bundle Branch Block, Left

Bundle Branch Block, Left with PVC 25%

Bundle Branch Block, Right

Hypercalcemia

Hyperkalemia

Hypertrophy, Biventricular

Hypertrophy, Left Ventricular

Hypertrophy, Right Ventricular

Hypocalcemia

Hypokalemia

Junctional

Junctional: HR 50

Long QT Syndrome

Myocardial Infarction with LBBB

Myocardial Infarction, Anterior

Myocardial Infarction, Anterolateral

Myocardial Infarction, Inferior

Myocardial Infarction, Lateral

Myocardial Infarction, Posterior

Myocardial Infarction, Septal

Myocardial Ischemia, Mild

Myocardial Ischemia, Moderate

Myocardial Ischemia, Moderate with PVCs 10%

Myocardial Ischemia, Severe

Paroxysmal Junctional Tachycardia

Paroxysmal Junctional Tachycardia: HR 130

Pericarditis

Premature Atrial Contraction

Premature Ventricular Contraction 10%

Premature Ventricular Contraction 25%

Pulseless Electrical Activity

Sinus

Sinus Bradycardia

Sinus Bradycardia: HR 40

Sinus Tachycardia

Sinus Tachycardia: HR 120

ST Elevation with Chest Pain

Torsade de Pointes

Trifascicular Block

Ventricular Fibrillation, Coarse

Ventricular Fibrillation, Fine

Ventricular Tachycardia

Ventricular Tachycardia, Pulseless

Ventricular Tachycardia, HR 151

Ventricular Tachycardia, Pulseless HR 151

Wellen's Syndrome

WPW Syndrome, Left Lateral Pathway

Arterial Catheter

The arterial pressure displayed on the Patient Status Display or TouchPro software is set using this parameter. A non-pulsatile, "zero" pressure signal is emitted when the **Atmosphere** position is selected and can be used to simulate zeroing a pressure transducer. This may also be used to remove the arterial pressure waveform, if desired. The **Left Ventricle** position is useful for simulating cardiac catheterization procedures, or for demonstrating left ventricular end-diastolic pressure and its relationship to pulmonary artery occlusion ("wedge") and central venous pressure.

Default: Peripheral Artery

Options: Atmosphere

Peripheral Artery

Left Ventricle

Central Venous Catheter

The venous pressure displayed on the Patient Status Display or TouchPro software is set using this parameter. A non-pulsatile, "zero" pressure signal is emitted when the **Atmosphere** position is selected and can be used to simulate zeroing a pressure transducer. This may also be used to remove the central venous pressure waveform, if desired (e.g., beginning of an SCE with an "unmonitored" patient).

Default: Right Atrium

Options: Atmosphere

Extrathoracic Vein

Intrathoracic Vein

Right Atrium

Pulmonary Artery (PA) Catheter

The pulmonary artery pressure displayed on the Patient Status Display or TouchPro software is set using this parameter. A non-pulsatile, "zero" pressure signal is emitted when the **Atmosphere** position is selected and can be used to simulate zeroing a pressure transducer. This may also be used to remove the pulmonary artery pressure waveform, if desired (e.g., beginning of an SCE with an "unmonitored" patient). The pulmonary artery catheter can be "floated" into position by sequencing through the right heart positions. This may also be scripted into a scenario using the Scenario Designer.

Default: Pulmonary Artery

Options: Atmosphere

Intrathoracic Vein

Right Atrium

Right Ventricle

Pulmonary Artery

Pulmonary Artery (PA) Balloon

Inflation of the pulmonary artery catheter balloon is simulated by switching to the **Inflated** option of the **PA Balloon** parameter. The appropriate pulmonary artery occlusion or "wedge" waveform is then displayed on the Patient Status Display or TouchPro software.

Default: Deflated

Options: Deflated

Inflated

Defibrillation (Defib)

The **Defib** parameter is used to simulate a specified amount of energy discharged via an external cardiac defibrillator. Setting this parameter results in the characteristic spike in the ECG, followed by a return to the pre-defibrillation rhythm. **Defib** has no direct effect on the electrical conduction system of the heart. Thus, synchronized cardioversion may be done "on the fly" or scripted using the Scenario Designer.

Default: 0 Joules

Range: 0 Joules - 360 Joules

Pacing Current

The **Pacing Current** parameter is used to simulate a specified amount of current discharged via an external cardiac pacer. Setting this parameter results in the characteristic pacing signal on the ECG waveform when the pacing current is at or above the capture threshold. Also, see **Pacing Capture Threshold**.

Default: 0 mA

Range: 0 mA - 200 mA

Pacing Rate

The **Pacing Rate** parameter determines the cardiac rate (in beats/minute) when the pacing current is at or above the pacing capture threshold. Also, see **Pacing Current** and **Pacing Capture Threshold**.

Default: 80 beats per minute

Range: 0 beats per minute - 119 beats per minute

Pacing Capture Threshold

The **Pacing Capture Threshold** parameter determines the minimum pacing current necessary to pace the heart via an external cardiac pacer. Also see **Pacing Current**. Pacing current values below the pacing capture threshold have no effect on the patient's heart rate.

Default: 50 mA

Range: 0 mA - 119 mA

Cold Fluid Inject

The Cold Fluid Inject parameter is used to simulate the injection of 10 mL saline into the pulmonary artery (PA) catheter. The appropriate Thermodilution waveform and cardiac output measurement are then displayed on the Patient Status Display or TouchPro software.

Cardiovascular – Additional Parameters

Cardiovascular Parameters – Additional
Baroreceptor Maximum Pressure
Baroreceptor Minimum Pressure
Left Ventricle Contractility Factor
Right Ventricle Contractility Factor
Systemic Vascular Resistance Factor
Venous Capacity Factor
Systemic Arteries Compliance Factor
Pulmonary Arteries Compliance Factor
Pulmonary Vasculature Resistance Factor
Venous Return Resistance Factor
Baroreceptor Gain (Overall) Factor
Baroreceptor Gain (Cardiac) Factor
Baroreceptor Gain (Peripheral) Factor
Chest Compression Efficacy
Tamponade Volume
Ischemic Index Sensitivity
Ischemic Index Averaging
Aortic Valve Resistance Factor
Mitral Valve Resistance Factor
Pulmonic Valve Resistance Factor

Baroreceptor Maximum Pressure

Baroreceptor maximum pressure defines the mean arterial pressure (MAP) at which the baroreceptor inhibitory activity on the heart and systemic vasculature is maximal. When a simulated patient's MAP increases above baseline pressure, the baroreceptor response exerts greater inhibitory controls on the MAP (e.g., reduction in heart rate) in an attempt to return the MAP to the patient's baseline pressure. However, these controls have an upper limit, and this "maximum pressure" is defined as the baroreceptor maximum pressure.

In other words, as the MAP increases, the physiological controls (i.e., baroreceptor response) work to bring the pressure back toward baseline, primarily by reducing the heart rate. For every 5 mmHg increase in MAP, the heart rate may decrease by 2 beats per minute in an attempt to keep the MAP in check. However, there is an upper limit ("maximum pressure"), after which these controls are no longer effective. Once the MAP reaches the baroreceptor maximum pressure, there is no additional reduction in heart rate if the pressure continues to rise. For example, should the pressure continue to rise, the heart rate would not show a corresponding slowing.

The MAP set-point is exactly between baroreceptor maximum pressure and baroreceptor minimum pressure.

Default: 112 mmHg

Range: 40 mmHg - 220 mmHg

Baroreceptor Minimum Pressure

Baroreceptor minimum pressure defines the mean arterial pressure (MAP) at which the baroreceptor inhibitory activity on the heart and systemic vasculature is minimal. When a simulated patient's MAP decreases below baseline pressure, the baroreceptor response exerts inhibitory controls on the MAP (e.g., increase in heart rate) in an attempt to return the MAP to the patient's baseline pressure. However, these controls have a lower limit, and this "minimum pressure" is defined as the baroreceptor minimum pressure.

In other words, as the MAP decreases, the physiological controls (i.e., baroreceptor response) work to bring the pressure back toward baseline, primarily by increasing the heart rate. For every 5 mmHg decrease in MAP, the heart rate may increase by 2 beats per minute in an attempt to keep the MAP in check. However, there is a lower limit ("minimum pressure"), after which these controls are no longer effective. Once the MAP reaches the baroreceptor minimum pressure, there is no additional increase in heart rate if the pressure continues to fall. For example, should the pressure continue to fall, the heart rate would not show a corresponding increase.

The MAP set-point is exactly between baroreceptor maximum pressure and baroreceptor minimum pressure.

Default: 72 mmHg

Range: 20 mmHg - 160 mmHg

Left Ventricle Contractility Factor

The **Left Ventricle Contractility Factor** parameter adjusts the contractility of the left ventricle and has a direct effect on cardiac output and blood pressure. Use this parameter to raise or lower the cardiac output.

Default: 1

Range: 0.10 - 10.00

Right Ventricle Contractility Factor

The **Right Ventricle Contractility Factor** parameter adjusts the contractility of the right ventricle and has a direct effect on pulmonary artery pressure and an inverse effect on central venous pressure. Use this parameter to raise or lower pulmonary artery pressure (PAP) or to change the central venous pressure (CVP).

Default: 1

Range: 0.10 - 10.00

Systemic Vascular Resistance Factor

The **Systemic Vascular Resistance Factor** parameter adjusts the baseline systemic vascular resistance. Raising the value increases the systemic vascular resistance while lowering the value decreases the vascular resistance.

Raising the parameter value is analogous to increasing the resistance to blood flow through the systemic vasculature. Under such conditions, the arterial blood pressure (ABP) increases, and the heart rate may decrease due to feedback from the physiological control mechanisms.

Default: 1

Range: 0.10 - 10.00

Venous Capacity Factor

The **Venous Capacity Factor** parameter adjusts the volume of blood contained in the unstretched venous system without an increase in venous pressure. Raising the value decreases the venous capacitance (vasodilatation and decreased vascular tone), while lowering the value increases the venous capacitance (vasoconstriction and increased vascular tone).

The volume of blood in the venous system has an inverse relationship to the blood pressure. Lowering the value is analogous to a "shift" in blood from the venous system to the arterial system, and this shift, when coordinated with increased systemic vascular resistance, results in an increase in blood pressure [arterial blood pressure (ABP), pulmonary artery pressure (PAP) and central venous pressure (CVP)].

Default: 1

Range: 0.10 - 100.00

Systemic Arteries Compliance Factor

The **Systemic Arteries Compliance Factor** parameter adjusts the pulse pressure (difference between systolic and diastolic pressures) of the simulated patient's systemic blood pressure. Increases in the compliance factor result in a decreased (narrower) pulse pressure, while smaller values increase the pulse pressure. Additionally, when the pulse pressure increases as a result of a reduced compliance factor, both systolic and diastolic pressures increase. Conversely, with a narrower pulse pressure (higher compliance factor), both the systolic and diastolic blood pressures also drop.

Default: 1

Range: 0.50 - 5.00

Pulmonary Arteries Compliance Factor

The **Pulmonary Arteries Compliance Factor** parameter adjusts the pulse pressure (difference between systolic and diastolic pressures) of the simulated patient's pulmonary blood pressure. Increases in the compliance factor decrease (narrow) the pulse pressure, while smaller values increase the pulse pressure. Additionally, when the pulse pressure increases as a result of a reduced compliance factor, both systolic and diastolic pulmonary pressures increase. Conversely, with a narrower pulse pressure (higher compliance factor) both the systolic and diastolic pulmonary pressures also drop.

Default: 1

Range: 0.20 - 5.00

Pulmonary Vasculature Resistance Factor

The **Pulmonary Vasculature Resistance Factor** parameter adjusts the baseline pulmonary vascular resistance. Raising the value increases the pulmonary vascular resistance, while lowering the value decreases the vascular resistance.

Raising the parameter value is analogous to increasing the resistance to blood flow through the pulmonary vasculature. Under such conditions, the pulmonary artery pressure (PAP) and central venous pressure (CVP) increase due to back-pressure through the right side of the heart.

Default: 1

Range: 0.10 - 10.00

Venous Return Resistance Factor

The **Venous Return Resistance Factor** parameter adjusts the resistance between the extrathoracic and intrathoracic venous compartments. Raising the value increases the resistance, while lowering the value decreases the resistance.

With less blood returning to the heart, there is a reduced volume entering the ventricles prior to ventricular contraction. This results in a drop in the cardiac output and decrease in arterial blood pressures. The heart rate increases due to feedback from the physiological control mechanisms in an attempt to maintain adequate blood pressures.

Default: 1

Range: 0.10 - 100.00

Baroreceptor Gain (Overall) Factor

The **Baroreceptor Gain (Overall) Factor** parameter adjusts the influence of mean arterial pressure (MAP) on heart rate, contractility, systemic vascular resistance and venous capacity. Use this parameter to adjust how vigorously the heart and vasculature respond to blood pressure changes. The degree of increase in heart rate or vascular response is influenced by the baroreceptor gain (overall) factor.

For example, when blood pressure falls, the heart rate increases, the arteries increase their vascular tone (resistance) and there is less pooling of the blood in the venous system, all in an attempt to maintain adequate blood pressure. A baroreceptor gain (overall) factor value of less than 1 corresponds to baroreceptor depression. A baroreceptor gain (overall) factor value greater than 1 leads to a stronger response to MAP changes.

Default: 1

Range: 0.00 - 100.00

Baroreceptor Gain (Cardiac) Factor

The **Baroreceptor Gain (Cardiac) Factor** parameter selectively adjusts the influence of mean arterial pressure (MAP) on the heart rate and contractility, influencing how much the heart rate increases or decreases with changes in blood pressure. Use this parameter to adjust how vigorously the heart responds to blood pressure changes.

A baroreceptor gain (cardiac) factor of less than 1 corresponds to baroreflex depression (e.g., less heart rate response to MAP changes). A value greater than 1 leads to a stronger response to MAP changes.

Default: 1

Range: 0.00 - 10.00

Baroreceptor Gain (Peripheral) Factor

The **Baroreceptor Gain (Peripheral) Factor** parameter adjusts the influence of mean arterial pressure (MAP) on systemic vascular resistance and venous capacity, influencing how much the vasculature responds to changes in blood pressure.

For example, when blood pressure falls, the arteries increase their vascular tone (resistance), and there is less pooling of the blood in the venous system, in an attempt to maintain adequate blood pressure. A factor of less than 1 corresponds to baroreflex depression (e.g., less systemic vascular resistance response to MAP changes). A value greater than 1 leads to a stronger response to MAP changes.

Default: 1

Range: 1.00 - 10.00

Chest Compression Efficacy

The **Chest Compression Efficacy** parameter is used to determine the effectiveness of chest compressions administered by the caregiver. The 100% setting indicates that chest compressions are completely effective, while the 0% setting prevents them from having any effect on intrathoracic pressure.

Default: 100%

Options: 100%

0%

Tamponade Volume

The Tamponade Volume parameter is used to set the amount of fluid or blood that is building up in the space between the myocardium and the pericardium, causing a cardiac tamponade.

Default: 0 mL

Range: 0 mL - 500 mL

Ischemic Index Sensitivity

The **Ischemic Index Sensitivity** parameter determines the relative sensitivity of the simulated patient to myocardial ischemia. A lower ischemic index sensitivity value corresponds to less sensitivity to an unfavorable oxygen supply/demand ratio (i.e., poor oxygenation with high heart rate). A patient with a low value is less sensitive to poor oxygenation, takes longer to go into the "death spiral" and, therefore, survives longer.

Default: 0.45

Range: 0.10 - 5.00

Model-Driven ECG Rhythm	Ischemic Index (I.I.)
Normal Sinus Rhythm (NSR)	I.I. ≥ 0.90
Mild ST Segment Depression	0.90 > I.I. ≥ 0.70
Moderate ST Segment Depression	0.70 > I.I. ≥ 0.60
Premature Ventricular Contractions (PVCs)	0.60 > I.I. ≥ 0.40
Ventricular Tachycardia (VTach)	0.40 > I.I.
Ventricular Fibrillation (VFib)	1 minute after VTach
Asystole	1 minute after VFib

The patient's response to myocardial ischemia may be altered using the **Ischemic Index Sensitivity** parameter found on the Cardiovascular view. To make the patient less sensitive to ischemia, lower the value below the default setting. To make the patient more sensitive, increase the value above the default setting. These changes are then reflected in the patient's Ischemic Index, as shown in the table above.

Ischemic Index Averaging

Ischemic index averaging determines how quickly myocardial ischemia develops in the presence of an unfavorable oxygen supply/demand ratio or how rapidly it resolves when myocardial oxygenation becomes favorable. By decreasing the averaging time (i.e., value toward 0.5), ischemia has a faster onset if there is a poor oxygen supply to the heart or a faster resolution with favorable oxygenation. Increasing the averaging time (i.e., value toward 0.99) means ischemia takes longer to develop or longer to resolve.

Use this parameter to speed up the recovery from the model-driven "death spiral." By setting the parameter to 0.5, a patient pulls out of the "death spiral" at a faster rate than with a setting of 0.99. However, the favorable conditions (i.e., better oxygenation and/or lower heart rate) must exist before the number is made smaller. If not, the patient's descent increases at a faster rate.

Default: 0.99

Range: 0.50 - 1.00

Aortic Valve Resistance Factor

The **Aortic Valve Resistance Factor** parameter is used to adjust the resistance to blood flow across the aortic valve. Increasing the value to greater than 1 corresponds to increased resistance to blood flow through the aortic valve.

Default: 1

Range: 1 - 1000

Mitral Valve Resistance Factor

The **Mitral Valve Resistance Factor** parameter is used to adjust the resistance to blood flow across the mitral valve. Increasing the value to greater than 1 corresponds to increased resistance to blood flow through the mitral valve.

Default: 1

Range: 1 - 1000

Pulmonic Valve Resistance Factor

The **Pulmonic Valve Resistance Factor** parameter is used to adjust the resistance to blood flow across the pulmonic valve. Increasing the value to greater than 1 corresponds to increased resistance to blood flow through the pulmonic valve.

Default: 1

Range: 1 - 1000

Fetal and Labor - Basic Parameters

Fetal and Labor Parameters - Basic
Rate of Descent
Fetal State
Contraction Frequency
Contraction Amplitude
Contraction Duration
Patient Pushing
Early Deceleration Magnitude
Late Deceleration Amplification Factor
Shoulder Dystocia
Shoulder Dystocia Resolution
Extraction of Posterior Arm
Arrested Labor
Arrested Labor Trigger Station
Arrested Labor Resolved by Traction
Traction Force Required to Resolve Arrested Labor
Manual Release of the Baby

Rate of Descent

The **Rate of Descent** parameter controls the rate of fetal descent during labor (cm/minute). The fetus descends only during contractions. Therefore, if there are no contractions, even if the rate of descent is set to maximum, the fetus will remain at the same position.

Default: 1.0 cm/minute

Range: 0 cm/minute – 15 cm/minute

Fetal State

The **Fetal State** parameter determines the state of the fetus during labor and can be set to **Calm Sleep**, **Active Sleep** or **Active Vigilance.**

Default: Active Sleep

Contraction Frequency

The **Contraction Frequency** parameter determines how often uterine contractions occur. This parameter is defined as the number of contractions per ten minutes. The contraction frequency parameter has some variability. The magnitude of the variability is determined by the **Contraction Frequency Variability** parameter, found in the Fetal & Labor Additional Parameters.

Default: 3 ctx/10 min

Range: 1 ctx/10 min - 7 ctx/10 min

Contraction Amplitude

The **Contraction Amplitude** parameter determines the amplitude of the uterine contractions. This parameter is defined in units of mmHg. The contraction amplitude has some variability. The magnitude of the variability is determined by the Contraction Amplitude Variability parameter found in the Fetal & Labor Additional Parameters.

Default: 50 mmHg

Range: 0 mmHg - 120 mmHg

Contraction Duration

The **Contraction Duration** parameter determines the length of the uterine contractions and is defined in units of seconds.

Default: 80 sec

Range: 0 sec - 120 sec

Patient Pushing

The **Patient Pushing** parameter determines whether the patient will be pushing during contractions. When this parameter is activated (On), there will be increased variability and increased peak height of both the intrauterine pressure and transabdominal uterine activity signals during a large contraction.

Default: Off

Early Deceleration Magnitude

The **Early Deceleration Magnitude** parameter determines the magnitude of the early decelerations in the fetal heart rate signal. The selectable options are None, Mild, Moderate and Severe.

Default: None

Late Deceleration Amplification Factor

Fetal heart rate (FHR) late decelerations associated with uterine contractions (UCs) are attributed to reductions in oxygen supply from the mother. The **Late Deceleration Amplification Factor** parameter allows for greater control over the amplitude of late decelerations in conditions where they would be expected, notably for the fetal patient with placental insufficiency. In addition, use of this parameter allows the instructor to demonstrate late decelerations for the normal fetus in the cases of maternal hypotension and uterine hyperactivity.

The Late Deceleration Amplification Factor is a multiplicative factor applied to the oxygen distribution in the fetus. Values above 1.0 speed up the propagation of reduced oxygen levels from the placenta to the fetal arteries.

Default: 1.0

Range: 1.0 – 5.0

Shoulder Dystocia

The **Shoulder Dystocia** parameter needs to be set to **Enabled** to activate the condition of Shoulder Dystocia. When **Enabled**, fetal descent will be interrupted when the fetal head has been delivered and restituted. "*Now in shoulder dystocia condition*" will be logged in the event log, and the numeric station indicator in the Graphic widget will display **>|**.

When **Shoulder Dystocia** is **Enabled**, a specific maneuver can be selected that will resolve the shoulder dystocia.

Default: Disabled

Shoulder Dystocia Resolution

The **Shoulder Dystocia Resolution** parameter determines what maneuver, if any, will resolve shoulder dystocia. Six options are available: None, McRoberts, Suprapubic Pressure, Rotation of Posterior Shoulder, Rotation of Anterior Shoulder, and Zavanelli. By default, shoulder dystocia resolution is set to None.

The **McRoberts** option activates the automatic resolution of shoulder dystocia upon the detection of the McRoberts maneuver performed correctly. Upon detection, "*McRoberts maneuver was performed*" and "*Shoulder dystocia condition resolved*" will be logged in the event log. Once shoulder dystocia is resolved, the fetus continues to be pushed, during the contractions, through the birth canal until reaching the final position. At the final position, the fetus is released from the birthing mechanism and is ready to be manually delivered.

The **Suprapubic Pressure** option activates the automatic resolution of shoulder dystocia when suprapubic pressure applied. The right force needs to be applied for at least 5 seconds to resolve the condition. Upon detection, "*Suprapubic pressure was applied*" and "*Shoulder dystocia condition resolved*" will be logged in the even log. Once shoulder dystocia is resolved, the fetus continues to be pushed, during the contractions, through the birth canal until reaching the final position. At the final position, the fetus is released from birthing mechanism and is ready to be manually delivered.

The **Rotation of Posterior Shoulder** option activates the automatic resolution of shoulder dystocia upon detection of proper rotation of the posterior shoulder. Upon detection, "*Posterior shoulder rotation maneuver was performed*" and "*Shoulder dystocia condition resolved*" will be logged in the event log. Once shoulder dystocia is resolved, the fetus is released from the birthing mechanism and can be manually delivered. Proper rotation of the posterior shoulder requires that the posterior shoulder is rotated at least 35°. Improper rotation of the posterior shoulder is prevented.

For example, if after restitution, the fetus is in LOT position, automatic resolution of shoulder dystocia requires that the posterior shoulder is rotated clockwise at least 35°. In LOT position, rotating the posterior shoulder counter-clockwise is prevented.

The **Rotation of Anterior Shoulder** option activates the automatic resolution of shoulder dystocia upon detection of proper rotation of the anterior shoulder. Upon detection, "*Anterior shoulder rotation maneuver was performed*" and "*Shoulder dystocia condition resolved*" will be logged in the event log. Once shoulder dystocia is resolved, the fetus is released from the birthing mechanism and can be manually delivered. Proper rotation of the anterior shoulder requires that the anterior shoulder is rotated at least 35°. Improper rotation of the anterior shoulder is prevented.

For example, if after restitution, the fetus is in LOT position, automatic resolution of shoulder dystocia requires that the anterior shoulder is rotated counter-clockwise at least 35°. In LOT position, rotating the anterior shoulder clockwise is prevented.

The **Zavanelli** option activates the automatic resolution of shoulder dystocia upon detection of proper Zavanelli performed. When in shoulder dystocia, the simulator allows the learner to manually push the fetus backwards through the birth canal, in between contractions. A successful Zavanelli maneuver is detected when the fetus is pushed up the descent mechanism a distance of approximately 6cm. Upon detection, "*Zavanelli maneuver was performed*" and "*Shoulder dystocia condition resolved*" will be logged in the event log.

The fetus must be powered on and connected to the simulator's wireless network and confirmed by the presence of a fetal battery charge status in the fetal battery status icon. The connection is required in order for the system to recognize the applied force to the head of the fetus as the learner attempts Zavanelli.

Extraction of Posterior Arm

The **Extraction of Posterior Arm** maneuver to resolve shoulder dystocia is not detected automatically. When a proper extraction has been performed, the Extraction of Posterior Arm parameter should be manually activated. This brings up an "Extract now" confirmation button. Clicking the button resolves shoulder dystocia and immediately releases the fetus that can now be manually extracted. Clicking anywhere else on the screen cancels the action.

Arrested Labor

The **Arrested Labor** parameter should be set to Enable to activate the condition of arrested labor. Enabling Arrested Labor leads to the interruption of fetal descent, once the fetus has reached the trigger station. The message "*Now in arrested labor condition*" will be logged in the event log.

Default: Disabled

Arrested Labor Trigger Station

The **Arrested Labor Trigger Station** parameter sets the fetal position at which the arrested labor condition will be applied. Arrested labor can be performed between station -3 and 3.

Default: 0

Range: -3 - 3

Arrested Labor Resolved by Traction

The **Arrested Labor Resolved by Traction** parameter activates/deactivates (yes/no) the automatic resolution of arrested labor upon detection of the required traction force. Upon detection of an adequate force applied during uterine contractions, "*Traction was applied to the fetus*" and "*Arrested labor condition resolved*" will be logged in the event log. Once the arrested labor condition resolved, the fetus can be pulled, during contractions, through the birth canal until reaching the final position. At the final position, the fetus is released from the birthing mechanism and is ready to be manually delivered.

Default: No

Traction Force Required to Resolve Arrested Labor

The **Traction Force Required to Resolve Arrested Labor** parameter sets the traction force required to resolve the arrested labor. Traction force is measured in Newtons.

Default: 30 N

Range: 10 N - 100 N

Manual Release of the Baby

The **Manual Release of the Baby** parameter is used to manually release the fetus from the birthing mechanism at any time and make the fetus ready for delivery. Upon activation, a "*Release now*" confirmation button appears. Clicking the button immediately releases the fetus. Clicking anywhere else on the screen cancels the action.

Fetal and Labor - Additional Parameters

Fetal and Labor Parameters - Additional
Maternal Position
Contraction Resting Tone
Contraction Frequency Variability
Contraction Amplitude Variability
UA Noise
TOCO Amplitude Gain
FHR Baseline
FHR Variability Coefficient
Umbilical Cord Compressibility Factor
FHR Acceleration Amplitude
FHR Acceleration Interval
FHR Acceleration Duration
Placental Perfusion Factor
Umbilical Flow Factor

Maternal Position

The **Maternal Position** parameters indicates the maternal position. By default, maternal position is set to **Auto**.

In **Auto**, the system is capable of detecting the following maternal positions:

- **Supine**
- **Left Lateral Tilt**
- **Trendelenburg**
- **Reverse Trendelenburg**

Three additional positions that need to be manually set are:

- **Hands and Knees**
- **Squatting**
- **Sitting**

Default: Auto

NOTE: Ensure the abdomen is installed on the torso whenever the mannequin is positioned upright.

Contraction Resting Tone

The **Contraction Resting Tone** parameter determines the uterine pressure level when there are no active contractions. This parameter is defined in units of mmHg. The contraction resting tone has some variability. The magnitude of this variability is determined by the UA Noise parameter.

Default: 10 mmHg

Range: 0 mmHg - 100 mmHg

Contraction Frequency Variability

The **Contraction Frequency Variability** parameter determines the variability present in the frequency of uterine contractions. This parameter is defined as a percentage.

Default: 100%

Range: 0% - 100%

Contraction Amplitude Variability

The **Contraction Amplitude Variability** parameter determines the variability present in the amplitude of uterine contractions. This parameter is defined as a percentage.

Default: 100%

Range: 0% - 100%

UA Noise

The **UA Noise** parameter determines the noise present in the uterine pressure signal. This parameter is defined as a percentage.

Default: 100%

Range: 0% - 100%

TOCO Amplitude Gain

The **TOCO Amplitude Gain** parameter modifies the amplitude of the uterine contractions in the transabdominal-uterine-activity signal only. This parameter is defined as a percentage.

Default: 100%

Range: 0% - 200%

FHR Baseline

The **FHR Baseline** parameter determines the baseline of the fetal heart rate signal. When set to modeled, the baseline will be dependent on the fetus' oxygen levels and arterial blood pressure. When overridden, the fetal heart rate will still be susceptible to accelerations and early decelerations. This parameter is defined in beats per minute (bpm).

Default: Modeled

Range: 30 bpm - 240 bpm

FHR Variability Coefficient

The **FHR Variability Coefficient** parameter determines the variability present in the fetal heart rate signal. When set to modeled, the variability will be dependent on the fetus' oxygen levels and the fetal state. This parameter is not defined in bpm, it is a unitless factor.

Default: Modeled

Range: 0 - 5

Umbilical Cord Compressibility Factor

The **Umbilical Cord Compressibility Factor** determines how susceptible the umbilical cord is to compression through uterine contractions. The primary use of this parameter is to introduce variable decelerations to the fetal heart rate signal due to uterine contractions. The parameter also allows for the scaling of these decelerations.

Default: 0

Range: 0 - 2.0

FHR Acceleration Amplitude

The **FHR Acceleration Amplitude** parameter determines the amplitude of the accelerations in the fetal heart rate signal. When set to modeled, it is dependent on the fetus' oxygen levels and the fetal state. The acceleration amplitude has some variability associated with it. This parameter is defined in bpm.

Default: Modeled

Range: 0 bpm - 20 bpm

FHR Acceleration Interval

The **FHR Acceleration Interval** parameter determines the interval between the accelerations in the fetal heart rate signal. When set to modeled, it is dependent on the fetal state. The acceleration interval has some variability associated with it. This parameter is defined in minutes.

Default: Modeled

Range: 1 min - 40 min

FHR Acceleration Duration

The **FHR Acceleration Duration** parameter determines the duration of the accelerations in the fetal heart rate signal. When set to modeled, it is dependent on the fetal state. The acceleration duration has some variability associated with it. This parameter is defined in seconds.

Default: Modeled

Range: 20 sec - 60 sec

Placental Perfusion Factor

The **Placental Perfusion Factor** parameter determines how easily blood flows into the placenta from the maternal circulation. Lowering this factor results in a decreased blood flow and oxygen supply to the fetus, leading to a gradual decrease in fetal heart rate, and a general deterioration of the fetus' condition. The effect of this parameter is independent of uterine contractions.

Default: 1.0

Range: 0 - 10

Umbilical Flow Factor

The **Umbilical Flow Factor** parameter determines how easily blood flows into and out of the fetal side of the placenta. Lowering this factor results in a decrease in blood flow and oxygen supply to the fetus' heart, as well as an increase in the fetus' blood pressure, leading to a decrease in fetal heart rate, and a general deterioration of the fetus' condition. This effect occurs much quicker with this parameter compared to the Placental Perfusion Factor parameter. The effect of this parameter is independent of uterine contractions.

Default: 1.0

Range: 0 - 1.0

Cardiotocograph (CTG) Configuration - Parameters

CTG Configuration Parameters
FHR Probe
MHR Probe
MSPO2 Probe
MNIBP Probe
Temp Probe
FHR Signal Loss
UA Signal Loss
TOCO Offset
MHR Graph
MHR Overrides FHR
MSPO2 Printing Frequency
MNIBP Printing Frequency

The following parameters control the operation of the emulated Cardiotocograph (CTG). The effect of a change is immediate and global (if there is more than one instance running, all change).

FHR Probe

The **FHR Probe** parameter determines the type of probe used for fetal heart rate monitoring.

Possible selection includes:

Disconnected – No probe is currently connected. The UA widget will display a "-" to indicate there is no probe and there will be no UA graph generated.

US – An external probe is in use.

FECG – An internal probe is in use

Default: US

UA Probe

The **UA Probe** parameter determines the type of probe used for uterine activity.

Possible selection includes:

Disconnected – No probe is currently connected. The FHR widget will display a "-" to indicate there is no probe and there will be no FHR graph generated.

TOCO – An external probe is in use. Noisy measurement.

IUP – An internal probe is in use. Accurate measurement.

Default: TOCO

MHR Probe

The **MHR Probe** parameter indicates if the emulated CTG has the capability to monitor the maternal heart rate and if the relevant probe is connected.

Possible selection includes:

Not Available – The emulated CTG does **not** have the capability to display the maternal heart rate. No MHR widget is displayed on the CTG. Unused reserved space is reallocated to the available widgets to minimize visual impact.

Connected – The emulated CTG **does** have the capability to display the maternal heart rate and a probe is connected. The MHR widget is displayed and provides live measurement of the maternal heart rate.

Disconnected – The emulated CTG does have the capability to display the maternal heart rate but no probe is connected. The MHR widget is displayed but displays "-" to indicate no data is being received.

Default: Connected

$MSPO_2$ Probe

The **$MSPO_2$ Probe** parameter indicates if the emulated CTG has the capability to monitor the maternal oxygen saturation and if the relevant probe is connected.

Possible selection includes:

Not Available – The emulated CTG does **not** have the capability to display the maternal oxygen saturation. No SpO_2 widget is displayed on the CTG. Unused reserved space is reallocated to the available widgets to minimize visual impact.

Connected – The emulated CTG **does** have the capability to display the maternal oxygen saturation and a probe is connected. The SpO_2 widget is displayed and provides live measurement of the maternal oxygen saturation.

Disconnected – The emulated CTG does have the capability to display the maternal oxygen saturation but no probe is connected. The SpO_2 widget is displayed but displays "-" to indicate no data is being received.

Default: Connected

MNIBP Probe

The **MNIBP Probe** parameter indicates if the emulated CTG has the capability to monitor the maternal blood pressure (non-invasive measurement) and if the relevant probe is connected.

Possible selection includes:

Not Available – The emulated CTG does **not** have the capability to display the maternal blood pressure. No MNIBP widget is displayed on the CTG. Unused reserved space is reallocated to the available widgets to minimize visual impact.

Connected – The emulated CTG **does** have the capability to display the maternal blood pressure and a probe is connected. The MNIBP widget is displayed and provides live measurement of the maternal non-invasive blood pressure.

Disconnected – The emulated CTG does have the capability to display the maternal blood pressure but no probe is connected. The MNIBP widget is displayed but displays "-" to indicate no data is being received.

Default: Connected

Temp Probe

The **Temp Probe** parameter indicates if the emulated CTG has the capability to monitor the maternal temperature and if the relevant probe is connected.

Possible selection includes:

Not Available – The emulated CTG does **not** have the capability to display the maternal temperature. No Temp widget is displayed on the CTG. Unused reserved space is reallocated to the available widgets to minimize visual impact.

Connected – The emulated CTG **does** have the capability to display the maternal temperature and a probe is connected. The temp widget is displayed and provides live measurement of the maternal temperature.

Disconnected – The emulated CTG does have the capability to display the maternal temperature but no probe is connected. The Temp widget is displayed but displays "-" to indicate no data is being received.

Default: Connected

FHR Signal Loss

The **FHR Signal Loss** parameter controls the overall quality of the fetal heart rate signal to emulate quality of the probe installation. This parameter indicates the relative amount of signal loss as a percentage. 0% is a clean signal with no loss. 100% results in no signal. Intermediary values create progressively larger gaps of data on the graph. The FHR widget displays "-" when there is no valid data. This parameter is applied, regardless of the probe type. Instructors can create various FHR signal quality scenarios by using this control and the probe type selection.

Default: 0

Range: 0 - 100

UA Signal Loss

The **UA Signal Loss** parameter controls the overall quality of the uterine activity signal. When set to "yes", the uterine activity signal is set to 0 regardless of the probe type.

Default: No

TOCO Offset

The **TOCO Offset** parameter is applicable only if the UA probe selected is TOCO. This parameter is used to shift the uterine activity signal by adding/removing a fixed pressure offset to the uterine pressure. It is useful to emulate conditions such as a tight UA probe belt. The effect is only from the change, previous historical data is not changed.

Default: 0

Range: -100 - 100

MHR Graph

The **MHR Graph** parameter activates the display of the maternal heart rate over the FHR display, when set to "on". The maternal heart rate graph appears as a blue line.

Default: Off

MHR Overrides FHR

The **MHR Overrides FHR** parameter activates the condition whereby the FHR probe picks-up the maternal heart beat rate, when set to "on".

Default: Off

$MSPO_2$ Printing Frequency

The **$MSPO_2$ Printing Frequency** parameter activates printing of the maternal SpO_2 value on the strip at the specified frequency selected. Printing occurs only if there is a connected SpO_2 probe.

Frequency selections include, in minutes: 1, 2, 3, 5, 10, 15, 30, 60, 90

Default: 10 minutes

MNIBP Printing Frequency

The **MNIBP Printing Frequency** parameter activates printing of the maternal MNIBP value on the strip at the specified frequency selected. Printing occurs only if there is a connected MNIBP probe.

Frequency selection includes, in minutes: 1, 2, 3, 5, 10, 15, 30, 60, 90

Default: 30 minutes

Patient Baseline - Parameters

Patient Baseline Parameters
Operating Mode
Delivery Paused on Run
Postpartum Included
Cervix
Presentation
Initial Station
Vertex Rotation Type
Breech Initial Position
Cord Prolapse
Nuchal Cord
Placenta Condition
Postpartum Initial Uterine State

Operating Mode

The **Operating Mode** parameter determines the overall hardware configuration and mode of operation for the mannequin. Operating modes are mutually exclusive and govern the mannequin hardware configuration and operation for the complete execution of a given SCE. Migration from one operating mode to another always entails a physical reconfiguration of the simulator. Reconfiguration occurs only at the start of the SCE except for Postpartum operating mode that can be combined with a vaginal delivery.

Possible modes include:

Prepartum & Latent Phase – Non-delivery operating mode that calls for a hardware configuration that allows performance of Leopold maneuver and assessment of static cervices.

Active Phase – Non-delivery operating mode that calls for a hardware configuration that uses the dynamic cervix to allow access and/or visibility to the fetus. Intended to emulate such conditions as cord prolapse or placenta abruption.

Vaginal Delivery – Delivery operating mode that supports spontaneous realistic delivery of the fetus.

Cesarean Section – Non-delivery operating mode that allows the trainee to go through the motions of a cesarean section in order to support cesarean teamwork training.

Postpartum – Non-delivery operating mode that supports the management of the postpartum uterus.

Non-Gravid – Non–delivery operating mode that supports the management of a non-pregnant patient.

Default: Vaginal Delivery

Delivery Paused on Run

The **Delivery Paused on Run** parameter is relevant only for the ***Vaginal Delivery*** operating mode. When set to **Yes**, the delivery mechanism is paused when the SCE starts. There is no progress of labor until delivery is requested to resume.

Default: Yes

Postpartum Included

The **Postpartum Included** parameter is relevant only for the ***Vaginal Delivery*** operating mode. When set to **Yes**, the software allows a transition within a delivery SCE to a postpartum configuration. Once the baby has been delivered, the user has the choice to proceed to postpartum. Once proceed to postpartum is requested, the user is offered the opportunity to reconfigure the mannequin for postpartum, before continuing the SCE.

Default: Yes

Cervix

The **Cervix** parameter is only relevant for the ***Prepartum & Latent Phase*** operating mode. This parameter allows the selection of the static cervix to be installed in the mannequin. The selected cervix will be mentioned in the configuration screen to let the user know which one to use.

Possible choices are:

Closed – closed, no effacement, firm, posterior.

One Finger (0%) – closed but penetrable by one finger, no effacement, firm, posterior.

One Finger (50%) – closed but penetrable by one finger, 50% effacement, medium, posterior.

Two Finger (70%) – closed but penetrable by two fingers, 70% effacement, soft, intermediate.

2cm (70%) – dilated 2cm, 70% effacement, soft, intermediate.

3cm (90%) – dilated 3cm, 90% effacement, soft, intermediate.

4cm (90%) – dilated 4cm, 90% effacement, soft, intermediate.

5cm (90%) – dilated 5cm, 90% effacement, soft, anterior.

Default: Closed

NOTE: Only the italic/bolded cervices comes standard with the mannequin, the others can be purchased separately as an optional kit.

Presentation

The **Presentation** parameter is relevant for all operating modes, except Postpartum. This parameter allows the selection of the fetal presentation, which includes **None** (Use when presentation is not relevant), **Vertex** and **Breech**.

Default: Vertex

Initial Station

The **Initial Station** parameter is relevant only for Vaginal Delivery, Active Phase, and Cesarean Section operating modes. This parameter indicates the starting station for the fetus. For Vaginal Delivery, the simulator will automatically locate the fetus in the indicated starting position once the configuration phase is completed. In the Active Phase and Cesarean Section operating mode the selected Initial Station is simply communicated to the user in the configuration instructions for manual positioning of the fetus.

Default: -3

Range: -3 - 3

Vertex Rotation Type

The **Vertex Rotation Type** parameter is only relevant for the Vaginal Delivery operating mode. This parameter specifies the desired sequence of cardinal movements as a sequence of target position for vertex presentation:

initial position - internal rotation target - restitution target

The eleven possible choices include:

LOA - OA - LOT ; ROA - OA – ROT; LOT - OA – LOT; ROT - OA – ROT; LOP - OA – LOT; LOP - OP – LOT; ROP - OA – ROT; ROP - OP – ROT; OP – OA; OA no rotation; and OP no rotation

Exceptions: OP – OA has only an internal rotation to OA and no restitution. OA no rotation and OP no rotation, have no spontaneous rotation.

Default: LOA-OA-LOT

Breech Initial Position

The **Breech Initial Position** parameter is relevant only for the Vaginal Delivery operating mode. This parameter specifies the initial fetal position for breech presentation. There is no spontaneous rotation with breech presentations. The eight possible choices are: ***LSA, LSP, LST, RSA, RSP, RST, SA, SP***

Default: LSA

Cord Prolapse

The **Cord Prolapse** parameter is only relevant for Vaginal Delivery, Active Phase, and Cesarean Section operating modes. When activated (**Yes**), the umbilical cord should be configured in a prolapse condition. This has no automatic effect and simply maps to the user instructions in the configuration screen.

Default: No

Nuchal Cord

The **Nuchal Cord** parameter is only relevant for the Vaginal Delivery, and Cesarean Section operating modes. When activated (**Yes**), the umbilical cord should be set in a nuchal cord condition. This has no automatic effect and simply maps to the user instructions in the configuration screen.

Default: No

Placenta Condition

The **Placenta Condition** parameter is only relevant for the Vaginal Delivery, Cesarean Section, and Postpartum operating modes. This parameter indicates what is the desired placenta condition. This has no automatic effect and simply maps to the user instructions in the configuration screen indicating which part to use. The options are **Intact** or **Fragmented**.

Default: Intact

Postpartum Initial Uterine State

The **Postpartum Initial Uterine State** parameter is only relevant for the Postpartum operating mode. This parameter indicates which type of uterus to use for postpartum. There are two different types of uterus: the revertible uterus, used for inverted uterus condition, and the boggy/contracted uterus, used to manage a boggy uterus condition.

Possible choices are:

Contracted – Requests use of the Boggy/Contracted uterus. Uterus will be in the contracted state.

Boggy – Requests use of the Boggy/Contracted uterus. Uterus will be in the boggy state.

Fully Inverted – Requests use of the Revertible uterus. Configuration instructions will request that the uterus be fully inverted.

Partially Inverted – Requests use of the Revertible uterus. Configuration instructions will request that the uterus be partially inverted.

Default: Contracted

Postpartum - Basic Parameters

Postpartum Parameters - Basic
Uterine Massage
Resolve Boggy Uterus
Inverted Uterus Can Be Reverted

Uterine Massage

The **Uterine Massage** parameter determines the effect of massage on the postpartum boggy/contracted uterus.

Possible choices are:

Ineffective - Massage of the uterus does not cause it to contract.

Effective - With **Effective**, successful compression of the uterus will fully contract the boggy uterus. Five effective compressions are required before contraction occurs. The feel of the uterus will not change for the first four massages, i.e., the uterus stays fully boggy for massages one through four. With the fifth massage, the uterus fully contracts over approximately 90 seconds and the message "Boggy uterus was declared resolved" appears in the event log.

A single massage/compression consists of pressing, holding, and releasing the uterus. With each successful massage, the message "Uterine compression was applied" is logged in the event log, independent of uterus mode (**Effective** or **Recurring atony**). In order to completely contract the uterus, one must execute five successful compressions in **Effective** or **Recurring atony** mode.

Additionally, when **Vaginal Bleeding Severity** is active (Mild, Moderate, Severe, or Profuse), each massage will produce a gush of blood in addition to the bleeding enabled by the vaginal bleeding severity parameter (see ***Vaginal Bleeding*** in the *Using Fidelis Lucina* section of this guide). This gush of blood occurs every time one presses on the uterus, whether or not the message "Uterine compression was applied" is logged in the event log, and is independent of the uterus mode (**Effective** or **Recurring atony**).

Recurring atony - With **Recurring atony**, the function is similar to **Effective** (i.e., the boggy uterus contracts after five successful logged massages). However, 90 seconds after contraction the uterus returns to the boggy state, and the message "Boggy uterus was declared resolved" does not appear in the event log.

In this mode, if massage is interrupted for 90 seconds or longer before it fully contracts, the massage count is reset, even when the uterine compressions are marked as effective (i.e., logged as "Uterine compression was applied").

For example, if the learner applies three logged massages then waits 90 seconds or longer to apply the next massage, the 'massage count' resets. From this point, five effective consecutive massages (i.e., without interruption) are required before the uterus contracts.

Resolve Boggy Uterus

The **Resolve Boggy Uterus** parameter is relevant only for the postpartum boggy/contracted uterus.

Activation of this parameter causes the boggy uterus to contract, regardless of uterine massage. When contraction of the uterus is desired, the Resolve Boggy Uterus parameter should be manually activated.

This brings up the "Contract now" confirmation button. Clicking the button causes the uterus to contract. Clicking anywhere else on the screen cancels the action.

Inverted Uterus Can Be Reverted

The **Inverted Uterus Can Be Reverted** parameter is relevant only for the postpartum inverted uterus. When set to "Yes", manual reversion of the inverted uterus is possible.

Default: No

Postpartum - Additional Parameters

Postpartum Parameters - Additional
Maternal Position

Maternal Position

The **Maternal Position** parameters indicates the maternal position. By default, maternal position is set to **Auto**.

In **Auto**, the system is capable of detecting the following maternal positions:

- **Supine**
- **Left Lateral Tilt**
- **Trendelenburg**
- **Reverse Trendelenburg**

Three additional positions that need to be manually set are:

- **Hands and Knees**
- **Squatting**
- **Sitting**

Default: Auto

NOTE: Ensure the abdomen is installed on the torso whenever the mannequin is positioned upright.

Parameter Display Definitions

The various patient displays and feedback windows in Müse, TouchPro Patient Monitor, and the TouchPro CTG Monitor use abbreviations to refer to the parameters displayed. The following is a list of parameters available for display and their abbreviations.

Müse Patient Status Display

The Müse Patient Status Display consists of waveform, numeric, and volume widgets, along with other special widgets for the maternal fetal simulator.

Waveform Widget Displays

Display	Physiological Variable
ABP	Arterial Blood Pressure
CO2	Capnogram
CVP	Central Venous Pressure
ECG aVF	ECG Lead aVF
ECG aVL	ECG Lead aVL
ECG aVR	ECG Lead aVR
ECG I	ECG Lead I
ECG II	ECG Lead II
ECG III	ECG Lead III
ECG V1	ECG Lead V1
ECG V2	ECG Lead V2
ECG V3	ECG Lead V3
ECG V4	ECG Lead V4
ECG V5	ECG Lead V5
ECG V6	ECG Lead V6
PAP	Pulmonary Artery Pressure
Pleth	Optoplethysmograph

Numeric Widget Displays

Display	Physiological Variable
Alveolar Enflurane	Alveolar Enflurane
Alveolar Halothane	Alveolar Halothane
Alveolar Isoflurane	Alveolar Isoflurane
Alveolar Nitrous Oxide	Alveolar Nitrous Oxide
Alveolar Sevoflurane	Alveolar Sevoflurane
BP	Blood Pressure
C.O.	Cardiac Output
Cervix Dilatation	Cervix Dilatation
CTG FHR	Cardiotocography Fetal Heart Rate
CVP	Central Venous Pressure
EtCO2	End Tidal Carbon Dioxide
FHR/IUP	Fetal Heart Rate / Intrauterine Pressure
FHR/TUA	Fetal Heart Rate / Transabdominal Uterine Activity
Hb	Hemoglobin
Hematocrit	Hematocrit
HR	Heart Rate
ICP	Intracranial Pressure
Ischemic Index	Ischemic Index
MAP	Mean Arterial Pressure
PACO2	Alveolar Partial Pressure Carbon Dioxide
PaCO2	Arterial Partial Pressure Carbon Dioxide
PAO2	Alveolar Partial Pressure Oxygen
PaO2	Arterial Partial Pressure Oxygen
PAP	Pulmonary Artery Pressure
PCWP	Pulmonary Capillary Wedge Pressure

Display	Physiological Variable
pH	pH
PvCO2	Venous Partial Pressure Carbon Dioxide
PvO2	Venous Partial Pressure Oxygen
RR	Respiratory Rate
SpO2	Oxygen Saturation
TAxilla	Axillary Temperature
TBlood	Blood Temperature
TBody	Body Temperature
Travel	Travel of Fetus Down Descent Mechanism (-3 to +20)
TRectal	Rectal Temperature
UA-BE	Umbilical Arterial Base Excess
UA-CaO2	Umbilical Arterial Oxygen Content
UA-PCO2	Umbilical Arterial Partial Pressure Carbon Dioxide
UA-pH	Umbilical Arterial pH
UA-PO2	Umbilical Arterial Partial Pressure Oxygen
UV-BE	Umbilical Venous Base Excess
UV-CvO2	Umbilical Venous Oxygen Content
UV-PCO2	Umbilical Venous Partial Pressure Carbon Dioxide
UV-pH	Umbilical Venous pH
UV-PO2	Umbilical Venous Partial Pressure Oxygen
VT	Tidal Volume

Volume Widget Displays

Display	Physiological Variable
Lung Volume	Lung Volume

Other Widget Displays

Display	Physiological Variable
FHR	Fetal Heart Rate
IUP	Intrauterine Pressure
TUA	Transabdominal Uterine Activity
UA	CTG Uterine Activity
CTG FHR	CTG Fetal Heart Rate
CTG UA	CTG Uterine Activity
1 minute	APGAR 1minute
5 minutes	APGAR 5 minutes

CPR Monitor

The following definitions apply to the parameters in the Müse CPR Monitor window.

Display	Definition
Hand Position	Hand position
Chest Compression	
Compression Depth	Compression Depth (inches)
Compression Rate	Compression Rate (per minute)
Chest Recoil	Compression Release (%)
Compression Fraction	Proportion of time in which chest compressions are performed (%)
Depth Variability	Standard Deviation of Compression Depth (inches)

Display	Definition
Ventilation	
Ventilation Volume	Ventilation Volume (mL)
Ventilation Rate	Ventilation Rate (breaths/min)
I:E Ratio	Inspiratory/Expiratory Ratio
Minute Ventilation	Minute Ventilation (L/min)
Alveolar Ventilation	Alveolar Ventilation (L/min)
Patient Vitals	
Blood Pressure	Arterial Blood Pressure
CePP	Cerebral Perfusion Pressure
CoPP	Coronary Perfusion Pressure
SpO2	Oxygen Saturation
EtCO2	End Tidal Carbon Dioxide
CPR Live Data	
Compression Depth	Compression Depth (inches)
Ventilation Volume	Ventilation Volume (mL)
CPR Summary	
Chest Compression Rate	Compression Rate (per minute)
Chest Compression Depth Average	Compression Depth Average (inches)
Chest Compression Depth Variability	Standard Deviation of Compression Depth (inches)
Chest Compression Recoil	Compression Release (%)
Chest Compression Fraction	Proportion of time in which chest compressions are performed (%)
Ventilation Volume Average	Ventilation Volume Average (L/min)
Ventilation Rate	Ventilation Rate (breaths/min)
Ventilation I:E Average	Inspiratory/Expiratory Ratio Average

Traction Feedback

Display	Definition
Current Force	Neck Traction Force in Newton (N)
Peak Force	Maximum Neck Traction Force in Newton (N)
Force	Neck Traction Force (graph)
UA	Uterine Activity (graph)

TouchPro Patient Monitor and TouchPro CTG

The TouchPro Patient Monitor and TouchPro CTG display consists of numeric and volume widgets. A 12-lead ECG report can also be generated from the TouchPro Patient Monitor software.

Waveform Widget Displays

Display	Physiological Variable
ECG I	ECG Lead I
ECG II	ECG Lead II
ECG III	ECG Lead III
ECG V1	ECG Lead V1
ECG V2	ECG Lead V2
ECG V3	ECG Lead V3
ECG V4	ECG Lead V4
ECG V5	ECG Lead V5
ECG V6	ECG Lead V6
ECG aVL	ECG Lead aVL
ECG aVR	ECG Lead aVR
ECG aVF	ECG Lead aVF
ABP	Arterial Blood Pressure
PAP	Pulmonary Artery Pressure
CVP	Central Venous Pressure
Pleth	Optoplethysmograph
Capnogram	Capnogram

Numeric Widget Displays

Display	Physiological Variable
ABP	Arterial Blood Pressure
TAxilla	Axillary Temperature
TBlood	Blood Temperature
TBody	Body Temperature
CVP	Central Venous Pressure
C.O.	Continuous Cardiac Output
EtCO2	End Tidal Carbon Dioxide
HR	Heart Rate
ICP	Intracranial Pressure
MAP	Mean Arterial Pressure
NIBP	Non Invasive Blood Pressure
PACO2	Alveolar Partial Pressure Carbon Dioxide
PaCO2	Arterial Partial Pressure Carbon Dioxide
PAO2	Alveolar Partial Pressure Oxygen
PaO2	Arterial Partial Pressure Oxygen
PCWP	Pulmonary Capillary Wedge Pressure
PAP	Pulmonary Artery Pressure
Pulse	Pulse
PvCO2	Venous Partial Pressure Carbon Dioxide
PvO2	Venous Partial Pressure Oxygen
TRectal	Rectal Temperature
RR	Respiratory Rate
SpO2	Oxygen Saturation
Therm C.O.	Thermodilution Cardiac Output

12-Lead ECG Report Parameters

Parameter	Physiological Variable
I	ECG Lead I
II	ECG Lead II
III	ECG Lead III
aVR	ECG Lead aVR
aVL	ECG Lead aVL
aVF	ECG Lead aVF
V1	ECG Lead V1
V2	ECG Lead V2
V3	ECG Lead V3
V4	ECG Lead V4
V5	ECG Lead V5
V6	ECG Lead V6

Recommended Clinical Supply Sizes

The following clinical supply sizes are recommended for use with maternal fetal simulator. Other sizes may cause damage to simulator and should not be used.

Recommended Clinical Supply Sizes	
Combitube	41 Fr
Endotracheal (ETT)	6.5 - 7.5 mm
i-gel Supraglottic Airway	#4
Intrauterine Balloon	24 Fr
IV Cannula	14 - 20 g
King Airway	#4
Laryngeal Mask Airway (LMA)	#4, #5
Nasal-pharyngeal Airway	28 Fr
Oropharyngeal Airway	90 mm
Urinary Catheter	14 Fr

The Ischemic Index (Death Spiral)

The Ischemic Index is a measure of the myocardial ischemia modeled using classical determinants. When an unfavorable oxygen supply/demand ratio occurs, myocardial ischemia follows. The lower the Ischemic Index, the greater the myocardial ischemia. The Ischemic Index is derived through the underlying physiological models and cannot be measured clinically.

Favorable supply/demand ratios (slower heart rates, higher blood oxygenation levels) generally result in a higher Ischemic Index value, whereas unfavorable supply/demand ratios (faster heart rates, lower blood oxygenation levels) generally result in a lower Ischemic Index value.

The patient's Ischemic Index value can be viewed by selecting the Ischemic Index widget from the Patient Status Display.

The table below lists Ischemic Index values and their corresponding patient conditions.

Model-Driven ECG Rhythm	Ischemic Index (I.I.)
Normal Sinus Rhythm (NSR)	I.I. ≥ 0.90
Mild ST Segment Depression	0.90 > I.I. ≥ 0.70
Moderate ST Segment Depression	0.70 > I.I. ≥ 0.60
Premature Ventricular Contractions (PVCs)	0.60 > I.I. ≥ 0.40
Ventricular Tachycardia (VTach)	0.40 > I.I.
Ventricular Fibrillation (VFib)	1 minute after VTach
Asystole	1 minute after VFib

The patient's response to myocardial ischemia may be altered using the **Ischemic Index Sensitivity** parameter found in the **Cardiovascular** view (Additional Parameters). To make the patient less sensitive to ischemia, lower the value below the default setting. To make the patient more sensitive, increase the value above the default setting.

WIRELESS VOICE LINK

This information is intended to assist in preparing Wireless Voice Link (WVL) devices for use in conjunction with Fidelis Lucina.

Cautions and Warnings

This device complies with part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme aux normes d'Industrie Canada exempts de licence RSS (s). Son fonctionnement est soumis aux deux conditions suivantes:

1. Cet appareil ne doit pas provoquer d'interférences.
2. Cet appareil doit accepter toute interférence, y compris les interférences pouvant provoquer un fonctionnement indésirable de l'appareil.

Any modifications made to this device without the express approval of CAE could void the user's authority to operate this equipment.

What's Included

The WVL package includes the following items:

- Wireless Voice Link Handset (1)
- Olympus ME52W Standalone Microphone (1)
- AAA Alkaline Batteries (2)
- Quick Start Guide (1)

How It Works

The WVL is a radio pair that operates in the 2.4 GHz unlicensed radio band. The handset communicates wirelessly with the base station located inside the simulator. The base station converts the digitized microphone stream from the handset and outputs it via the base station to the headphone and line out jacks. The output projects through the head speakers inside the simulator.

To accommodate multiple WVL pairs in close proximity, each WVL is assigned two RF channels on which to operate. The RF channels divide up the 2.400 – 2.4835 GHz spectrum in 80 single frequencies to prevent the WVLs from interfering with each other.

Due to the nature of the unlicensed 2.4 GHz band, there may be other devices such as Wi-Fi, microwave ovens or Bluetooth® radios operating in the 2.4 GHz band as well. Therefore, two channels are used to transmit the audio stream redundantly to avoid interference. In case there is an interference in one channel, the other can be used to extract the audio stream.

To operate correctly, both the handset and base station should be set to the same frequency using the DIP switches located in the devices. If the interference is too high, the WVL firmware has the ability to change channels automatically to avoid interruption. This process occurs simultaneously in both the handset and the base station without the need for user intervention. The units revert back to the original frequency set on the DIP switches when both devices are restarted using the power switch.

Recommendations for Use

To receive the best sound quality from the WVL, please note the following recommendations:

- Do not separate the WVL pair with more than two walls.
- Use channels 0 through 11 for the best sound quality.
- Use channels 12 through 31 if more than 12 simulators are present in one area.

Wireless Voice Link Devices

There are two unique devices that make up a WVL pair: the handset device and the base station device. The base station device is located inside the simulator, while the handset device is battery powered and carried by the user. The handset transmits voice input through a microphone to the base station receiver, where it is transmitted to the speakers in the simulator's head. The two different devices can be identified by their cases.

The handset device has a cover that extends over the length of the antenna.

WVL Handset

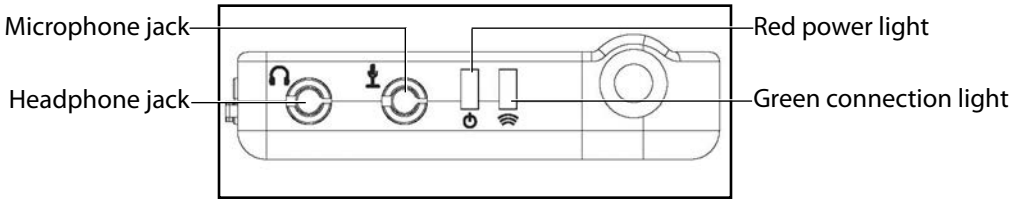
The base station device antenna is almost fully exposed.

WVL Base Station

Physical Features

The following features are located on the top of the WVL devices:

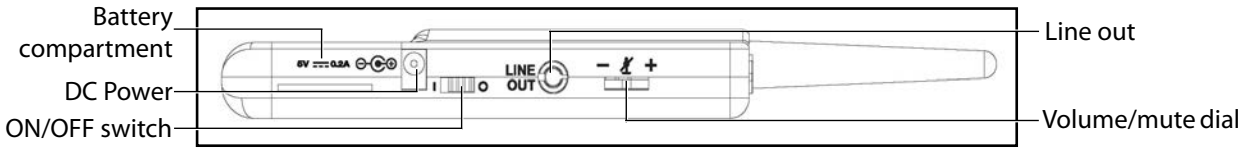
- **Headphone jack:** Used to plug in headphones or an iPhone compatible headphone/microphone combination
- **Microphone jack:** Used to plug in a standalone microphone
- **Red power light:** Indicates when the unit is powered on by blinking. Also indicates when the Mute button is activated by solidly staying on.
- **Green connection light:** Indicates an RF link connection between the handset and base station by blinking.



WVL Front View

The following features are located on the side of the WVL devices:

- **Battery compartment:** Houses two AAA batteries and the DIP switch.
- **DC power jack:** Accommodates a 5VDC/0.2A power source.
- **ON/OFF switch:** Turns WVL handset power on or off.
- **Line out jack:** Connects the WVL to the simulator's audio amplifier.
- **Volume/mute dial:** Controls microphone gain and microphone mute on the handset.



WVL Side View

On the WVL handset, the volume/mute dial controls the microphone volume or mutes the microphone.

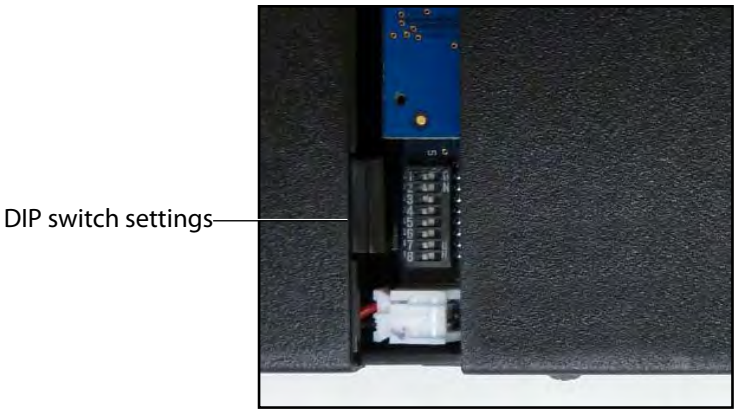
On the WVL base station, the dial serves as the volume control for the speakers inside the simulator. Moving the dial toward the plus sign increases the volume. Moving the dial toward the minus sign decreases the volume and setting. On the handset, pressing straight down on the volume dial in the center mutes the microphone.

Preparing the Base Station in the Simulator

When using the base station in the simulator, ensure the batteries are removed and the following items are attached:

- Power cable
- Line out cable

The DIP switch is located in the battery compartment of the base station (Figure 5: DIP Switch Settings).

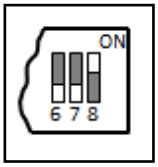


Dip Switch Settings

The base station should come already connected and installed inside the simulator.

To prepare the base station:

1. Set the base station DIP switch positions 6 and 7 to OFF, and 8 to ON.
2. Turn the power off and on using the power switch on the outside of the base station to ensure the DIP switch changes take effect.
3. Leave the power switch on the outside of the base station in the on position.



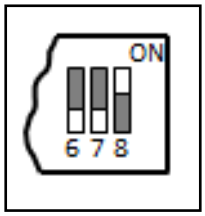
DIP Switch Settings for the Base Station

NOTE: Since the base station receives power from the simulator, the power switch on the outside of the base station must remain in the ON position. Use this power switch to refresh DIP switch settings. Do not turn the simulator off and on to refresh the DIP switch settings.

Preparing the Handset for Use

To prepare the handset for use:

1. Insert two AAA batteries into the battery compartment.
2. Set the handset DIP switch positions 6 and 7 to OFF and position 8 to ON.
3. Turn the power switch off and back on to ensure the DIP switch changes take effect.



DIP Switch Settings for the Handset

While DIP switch positions 6 through 8 affect the handset and base station settings, DIP switch positions 1 through 5 are used to set the radio frequency channel used for communication between the handset and the base station.

Selecting the Radio Frequency Channel

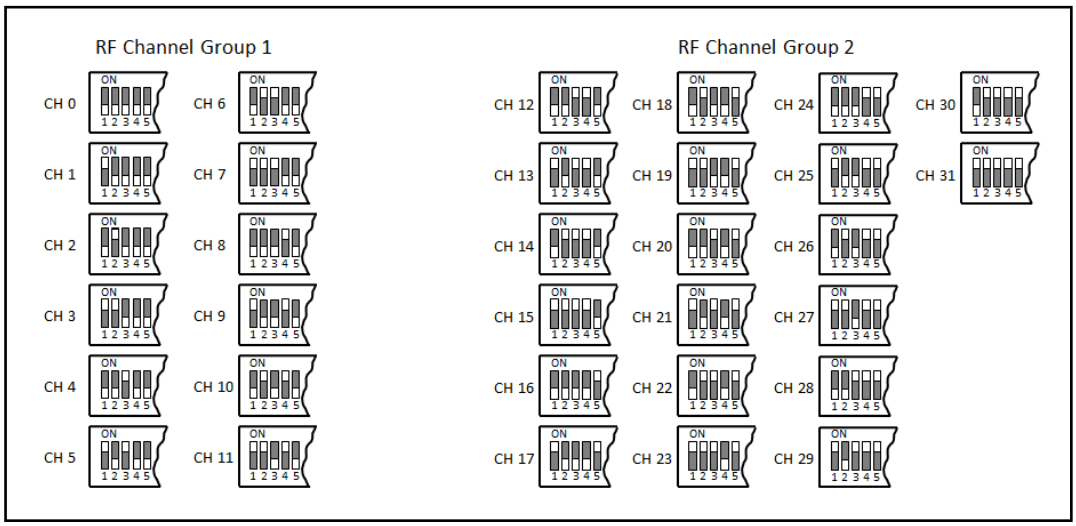
There are two ways to configure the radio frequency (RF) channel spacing. The first method reduces channel-to-channel interference, but allows only 12 channels to operate simultaneously in the same vicinity. The second method increases the number of channels that can be used simultaneously to 20 channels. However, this method diminishes the channel-to-channel noise immunity.

All of the WVL pairs in the same vicinity must use channels from RF Channel Group 1 or RF Channel Group 2, and channels must belong to the same group. The DIP switch determines the initial communication frequencies that the WVL pair use to communicate when the power of the base station and handset is first turned on. If there is too much interference at the initial channel, the WVL pair changes frequency automatically and continues operating. The WVL pair repeats this process automatically as needed and changes frequencies when interference is too high.

Multiple WVL pairs can be set to the same initial frequency. However, setting different initial frequencies helps the WVL pairs quickly find a stable operating frequency.

For example, if there are 12 or fewer simulators in the same vicinity, set all of the WVL pairs to use channel 0 of RF Channel Group 1. To give unique initial RF frequencies, assign each WVL pair to its own RF channel with the settings found in CH 0 through CH 11.

If you have 13 to 20 simulators in the same vicinity, set all of the WVL pairs to use channel 12 of RF Channel Group 2. To give unique initial RF frequencies, assign each WVL pair to its own RF channel with the settings found in CH 12 through CH 31.



RF Channel Selection Methods

For a complete list of the initial frequencies associated with the RF Channels, see *RF Channel Initial Operating Frequencies*.

Powering Up the WVL Pair

To power up the WVL pair:

Power on the base station by turning on the simulator. The base station power switch is in the on position by default.

Power on the handset by setting the power switch to the on position.

The red power light on each unit blinks when the unit is on. Once both units are powered on and communicating with each other, the green connection light flashes once every second.

If the green connection light fails to blink, ensure both units are set to the same RF channel.

If you make changes to the DIP switch settings, toggle the power switches of the handset and base station off and back on to ensure the changes takes effect.

Using the iPhone/Standalone Microphone

DIP switch position 6 on the handset determines if the iPhone microphone input or the standalone microphone input is enabled. When DIP switch position 6 is set to the OFF position, the standalone

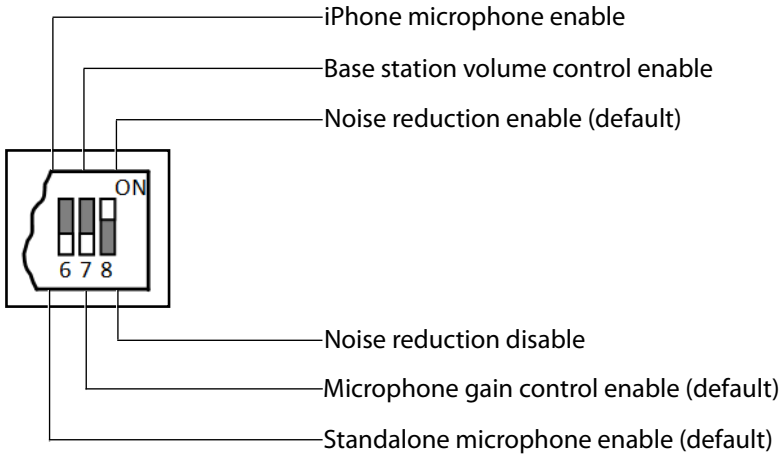
microphone jack is enabled for the standalone microphone, provided by CAE Healthcare.

Handset and CAE Healthcare-provided Microphone

To use a microphone compatible with an iPhone (three-pole jack), set DIP switch position 6 to ON. Please note that an iPhone-compatible microphone is not provided as part of the product package. Any microphone with a common 3.5 mm input jack can be used with the handset when DIP switch position 6 is set to ON.

Special Handset Settings

Advanced settings for the handset DIP switch are available.



Advanced DIP Switch Settings

DIP switch settings are only refreshed when the handset is powered on. To ensure the DIP switch changes take effect, turn the power off and back on after making changes.

To enable noise reduction and minimize background noise in high ambient noise environments, place the position 8 DIP switch in the ON position.

Battery Capacity Indicator

The red power light flashes one time every second when the battery capacity is good. When the battery capacity is nearly depleted, the red power LED flashes twice in quick succession every second. This indicates the batteries need to be replaced.

To get the most battery life out of the handset, the handset should be powered down when it is not in use.

Troubleshooting

CAE Healthcare Customer Service is available to help with iStan problems, should they arise. However, sometimes you can speed up the customer service process by performing diagnostics before calling, and eliminating some problems on your own with the help of the following instructions.

Power Problems

The red power light on the handset does not flash when power switch is turned on.

- Check that the batteries are inserted correctly. Install a fresh set of batteries, if needed.

The red power light on my base station is not flashing when the simulator is powered on.

- Check that the cables from the simulator are installed in the base station correctly.

Audio Problems

The sound output from the simulator is low when using a microphone on my lapel.

- Increase the microphone gain on the handset by moving the dial towards the plus sign. DIP switch 7 must be in the OFF position for this to work.

I'm hearing feedback from the microphone when I am close to the simulator.

- Decrease the microphone gain on the handset by moving the dial towards the minus sign. DIP switch 7 must be in the OFF position for this to work.

The sound output from the simulator is too high or too low.

- The volume level is configured at the factory for optimal performance. However, if you want to adjust the volume level of the base station (located inside the simulator), set the handset DIP switch 7 to ON. Remember to turn the handset power off and on after each DIP-switch change. After this step is complete, you will be able to adjust the volume level of the base station by adjusting the handset volume dial.

The sound output from the simulator is noisy when the speaker is not speaking.

- You can use the noise reduction feature by setting the handset DIP switch position 8 to ON.

The simulator voice output is cut off when the speaker is speaking quietly.

- In this case, there are three possible options:
  - Attempt to talk louder
  - Increase the microphone gain
  - Disable the noise reduction feature by setting the handset DIP switch 8 to OFF.

RF Channel Initial Operating Frequencies

RF Channel	Frequency 1 (GHz)	Frequency 2 (GHz)
0	2.402	2.480
1	2.405	2.477
2	2.408	2.474
3	2.411	2.471
4	2.414	2.468
5	2.417	2.465
6	2.420	2.462
7	2.423	2.459
8	2.426	2.456
9	2.429	2.453
10	2.432	2.450
11	2.435	2.447
12	2.402	2.480
13	2.404	2.478
14	2.406	2.476
15	2.408	2.474
16	2.410	2.472
17	2.412	2.470
18	2.414	2.468
19	2.416	2.466
20	2.418	2.464
21	2.420	2.462
22	2.422	2.460
23	2.424	2.458
24	2.426	2.456
25	2.428	2.454
26	2.430	2.452
27	2.432	2.450

RF Channel	Frequency 1 (GHz)	Frequency 2 (GHz)
28	2.434	2.448
29	2.436	2.446
30	2.438	2.444
31	2.440	2.442

Fidelis Lucina Medication Information

The following table details the new medications available for administration in the Müse software specific to the Fidelis Lucina simulator. Each medication is listed along with whether the medication affects the patient's physiology (modeled or log-only), the medication category and the application of the medication.

Medication	Mode M = Modeled, L = Log-only	Category	Fidelis Lucina Simulator Application
Atosiban	M	Tocolytics	Used to supress preterm labor [Does not have U.S. FDA approval]
Betamethasone	L	Corticosteroids	For preterm delivery Used to stimulate fetal lung maturity
Carboprost tromethamine	L	Uterine stimulants	Used in management of postpartum hemorrhage (PPH) due to uterine atony*
Dinoprostone	L	Cervical Ripeningf	Used to "ripen"** the cervix prior to stimulation of uterine contractions
Ergonovine	L	Uterine Stimulants	Used in management of postpartum hemorrhage (PPH) due to uterine atony* [Not available in U.S.]
Hydralazine	L	Cardiovascular	Used to control severe hypertension in preeclampsia or eclampsia
Magnesium Sulfate	L	Tocolutics	Used to supress preterm labor Used in preeclampsia and eclampsia to treat hyperreflexia (twitching) and prevent convulsions (seizures)
Methyldopa	L	Cardiovascular	Used to lower blood pressure in PIH or preeclampsia
Methylergonovine	L	Uterine Stimulants	Used in management of postpartum hemorrhage (PPH) due to uterine atony*

Medication	Mode M = Modeled, L = Log-only	Category	Fidelis Lucina Simulator Application
Misoprostol	L	Uterine Stimulants	Used for labor induction to "ripen"** the cervix and promote uterine contractions Use in management of postpartum hemorrhage (PPH) due to uterine atony* [Not approved for labor induction in U.S.]
Oxytocin	M	Uterine Stimulants	Labor induction and augmentation Used in management of postpartum hemorrhage (PPH) due to uterine atony* (1st line treatment for PPH)
Ritodrine	L	Tocolytics	Used to suppress preterm labor [Not available in the U.S.]
Salbutamol (Albuterol)	L	Tocolytics	Used to suppress preterm labor
Sulprostone	L	Uterine Stimulants	Used in management of postpartum hemorrhage (PPH) due to uterine atony* [Not available in the U.S.]
Urapidil	L	Cardiovascular	Used to lower blood pressure in PIH or preeclampsia [Does not have U.S. FDA approval]

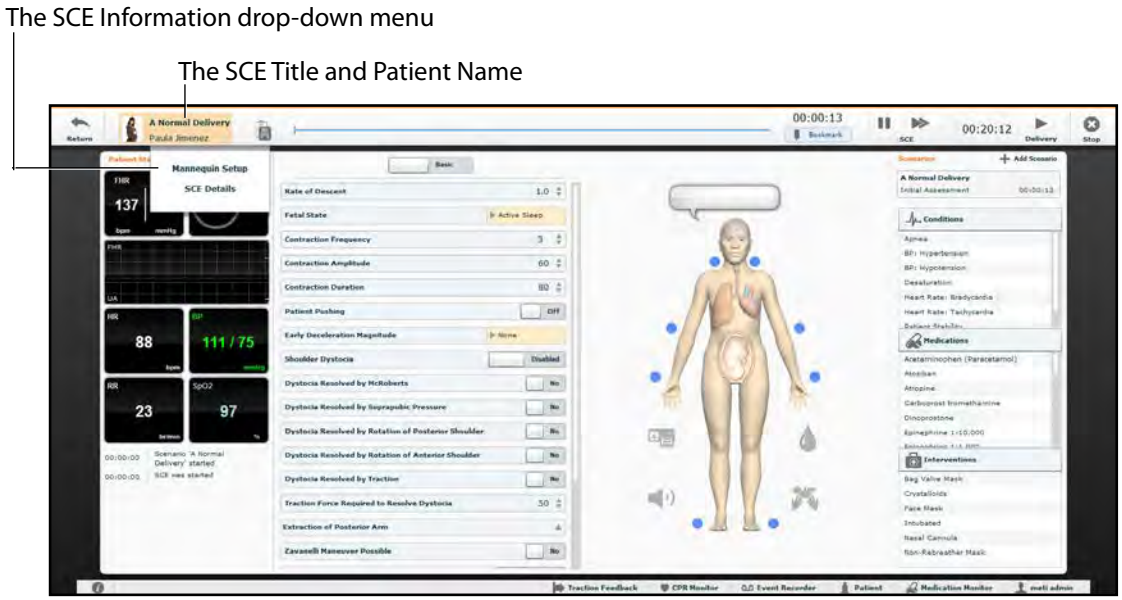
*Uterine atony = loss of contractions

**Cervical ripening = effacement or thinning; make the cervix softer and more distensible

MÜSE MANNEQUIN SETUP SCREENS

Upon opening an SCE in the Müse software, the Mannequin Setup screen automatically appears to assist users in the configuration of the mannequin and necessary equipment setup for the individual type of SCE.

The Mannequin Setup screen can also be accessed from the SCE Information drop-down menu by clicking the SCE Title and Patient name in the upper left corner of the Müse Run screen.

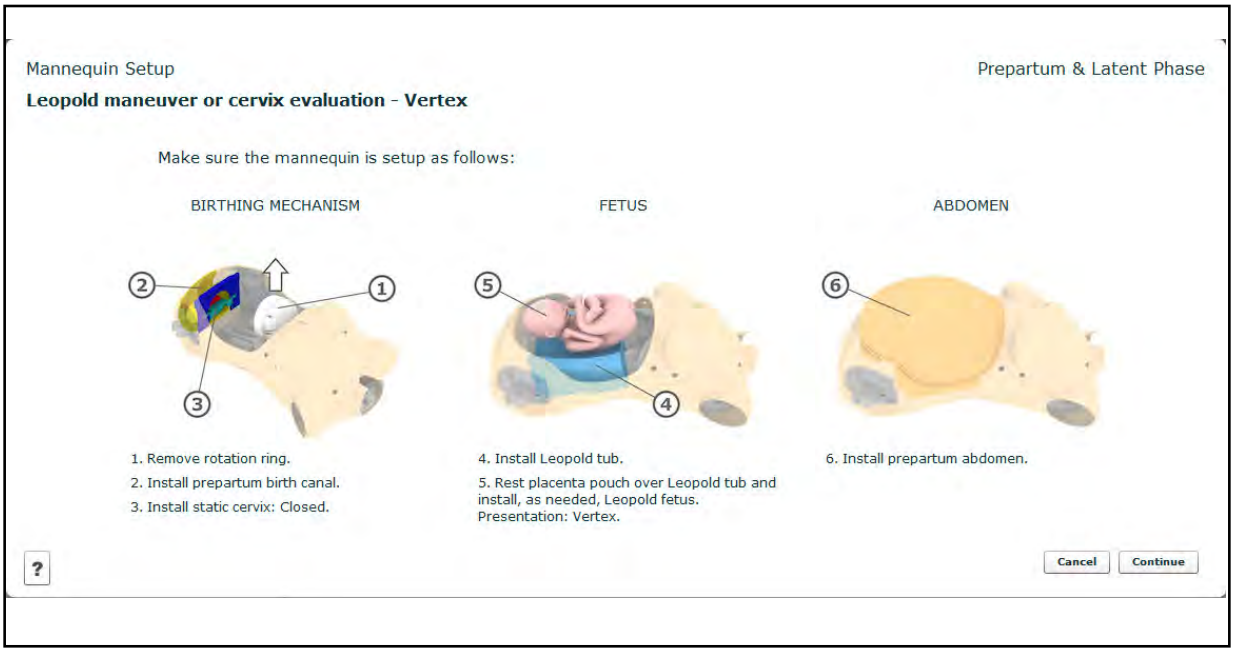


The Run Screen

For more details on configuring the mannequin in accordance with the Mannequin Setup screen, see the *Configuring the Mannequin* section in the user guide.

Mannequin Setup Screen for a Prepartum SCE

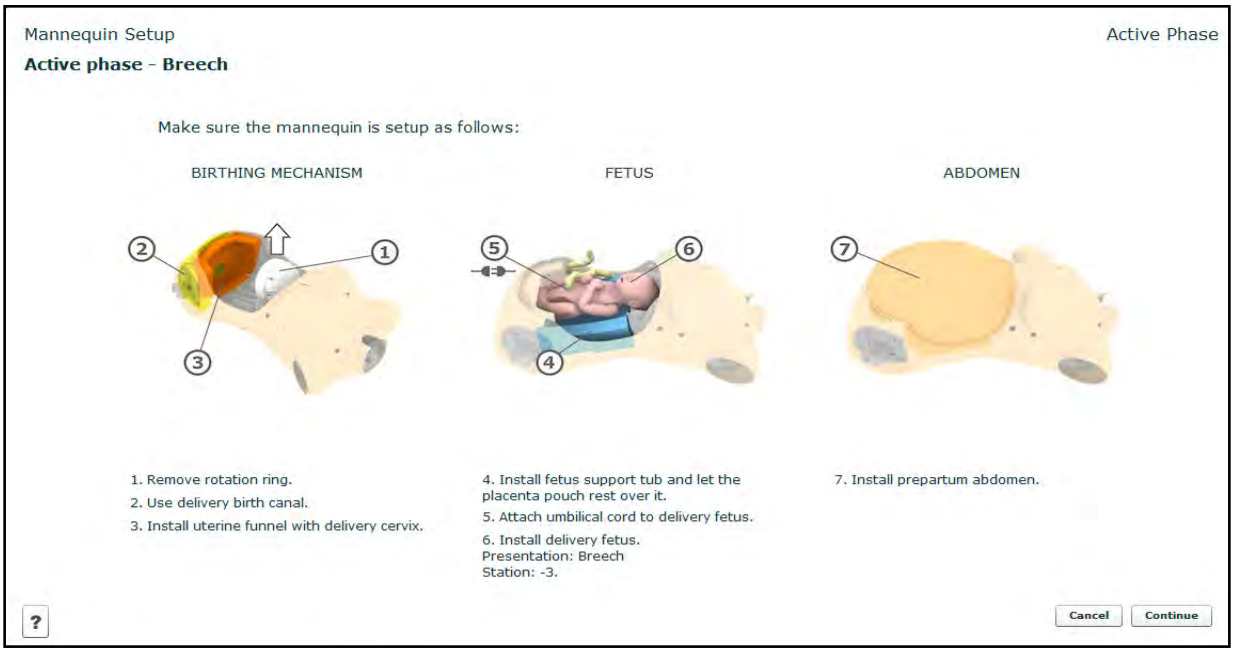
Once a prepartum & latent phase SCE is selected, the mannequin must be manually configured prior to beginning the simulation. The configuration will correspond with the diagrams presented on the Mannequin Setup screen in the Müse software.


Mannequin Setup
Prepartum & Latent Phase
Leopold maneuver or cervix evaluation - Vertex
Make sure the mannequin is setup as follows:
BIRTHING MECHANISM
FETUS
ABDOMEN
1. Remove rotation ring.
2. Install prepartum birth canal.
3. Install static cervix: Closed.
4. Install Leopold tub.
5. Rest placenta pouch over Leopold tub and install, as needed, Leopold fetus. Presentation: Vertex.
6. Install prepartum abdomen.
?
Cancel
Continue

The Mannequin Setup Screen - Prepartum and Latent Phase

Mannequin Setup Screen for an Active Phase Breech SCE

Once an active phase breech SCE is selected, the mannequin must be manually configured prior to beginning the simulation. The configuration will correspond with the diagrams presented on the Mannequin Setup screen in the Müse software.

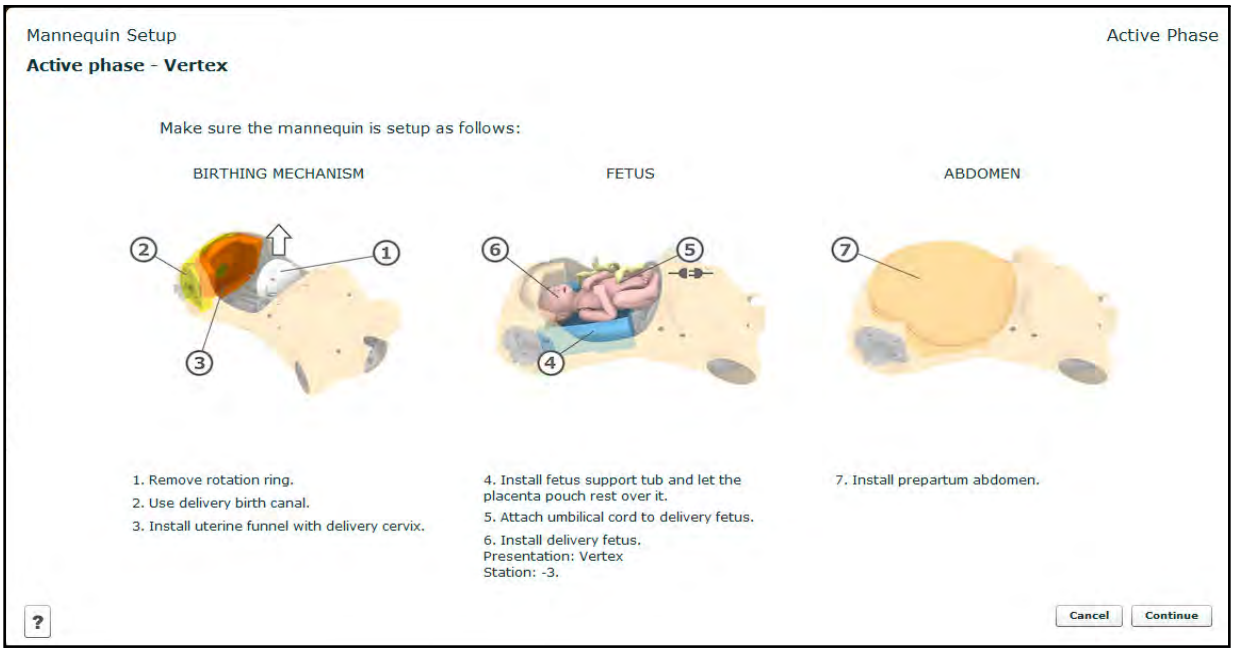


The Mannequin Setup Screen - Active Phase Breech Presentation

NOTE: Active Phase means non-delivery.

Mannequin Setup Screen for an Active Phase Vertex SCE

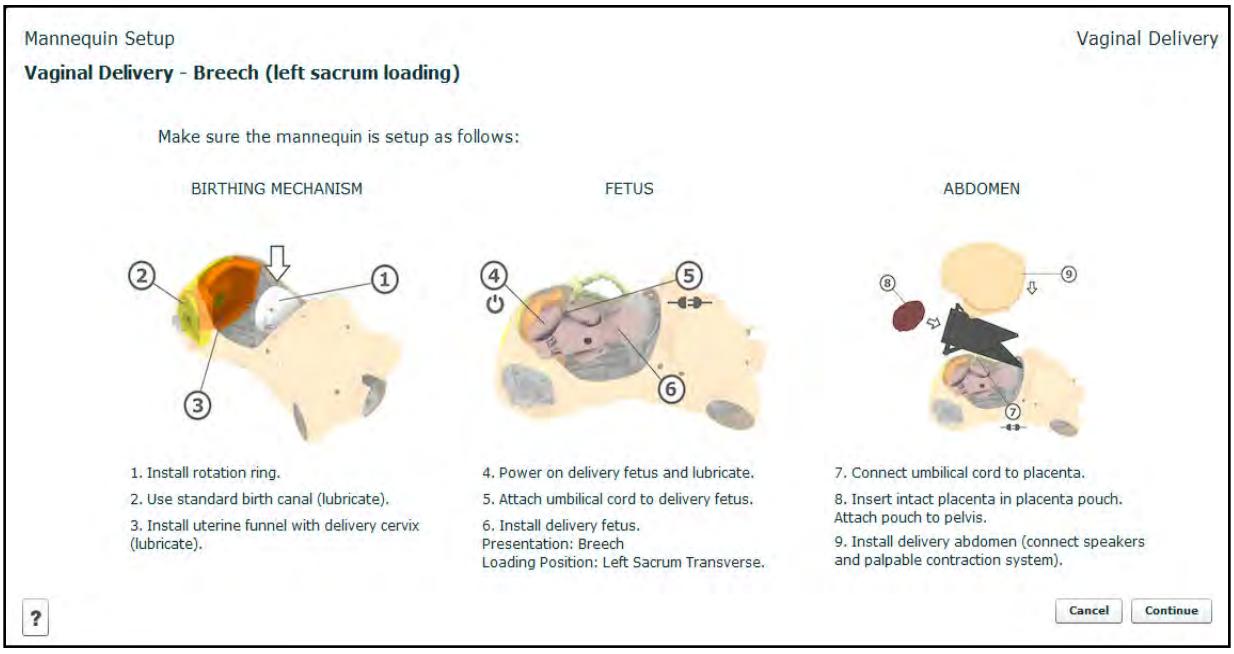
Once an active phase SCE is selected, the mannequin must be manually configured prior to beginning the simulation. The configuration will correspond with the diagrams presented on the Mannequin Setup screen in the Müse software.



The Mannequin Setup Screen - Active Phase Vertex Presentation

Mannequin Setup Screen for a Vaginal Delivery Breech Left Sacrum SCE

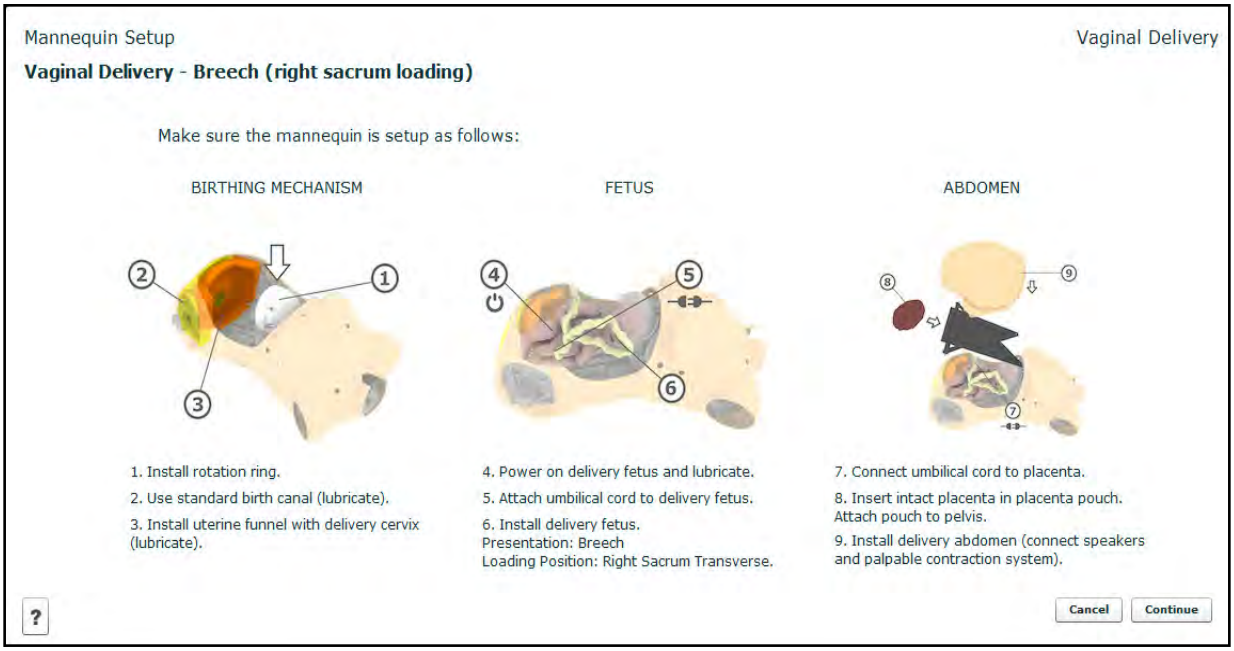
Once a vaginal delivery breech left sacrum SCE is selected, the mannequin must be manually configured prior to beginning the simulation. The configuration will correspond with the diagrams presented on the Mannequin Setup screen in the Müse software.


Mannequin Setup
Vaginal Delivery
Vaginal Delivery - Breech (left sacrum loading)
Make sure the mannequin is setup as follows:
BIRTHING MECHANISM
FETUS
ABDOMEN
1. Install rotation ring.
2. Use standard birth canal (lubricate).
3. Install uterine funnel with delivery cervix (lubricate).
4. Power on delivery fetus and lubricate.
5. Attach umbilical cord to delivery fetus.
6. Install delivery fetus.
Presentation: Breech
Loading Position: Left Sacrum Transverse.
7. Connect umbilical cord to placenta.
8. Insert intact placenta in placenta pouch. Attach pouch to pelvis.
9. Install delivery abdomen (connect speakers and palpable contraction system).
?
Cancel
Continue

The Mannequin Setup Screen - Vaginal Delivery Breech Left Sacrum Presentation

Mannequin Setup Screen for a Vaginal Delivery Breech Right Sacrum SCE

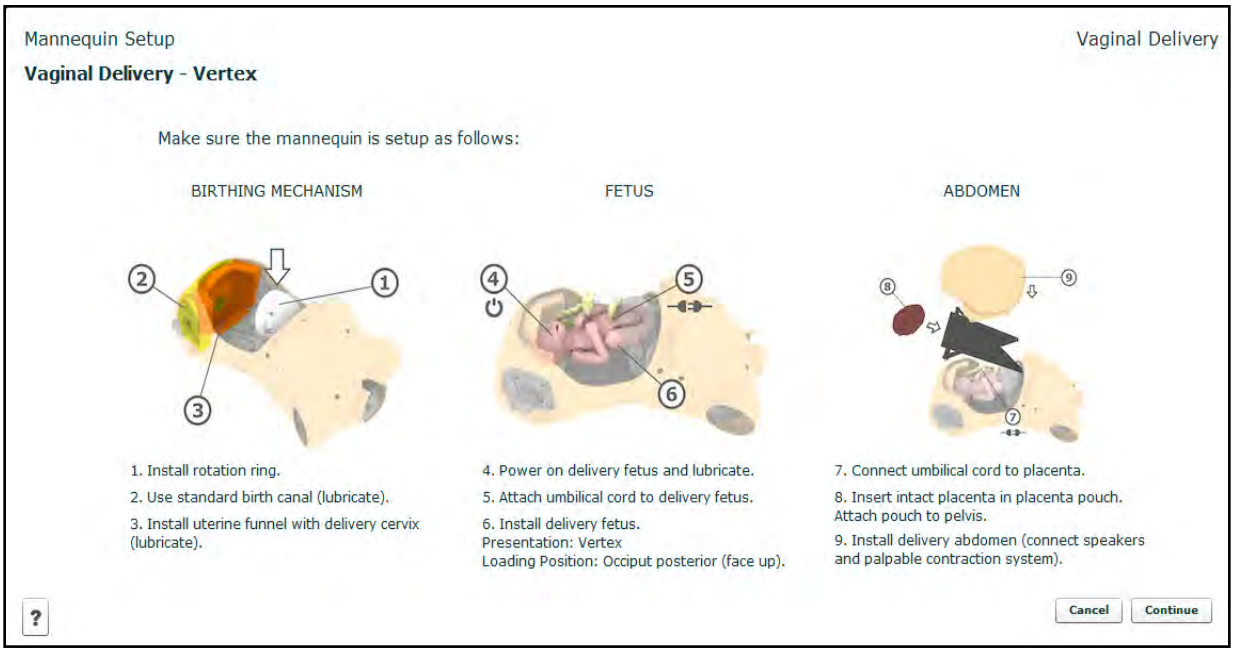
Once a vaginal delivery breech right sacrum SCE is selected, the mannequin must be manually configured prior to beginning the simulation. The configuration will correspond with the diagrams presented on the Mannequin Setup screen in the Müse software.


Mannequin Setup
Vaginal Delivery
Vaginal Delivery - Breech (right sacrum loading)
Make sure the mannequin is setup as follows:
BIRTHING MECHANISM
FETUS
ABDOMEN
1. Install rotation ring.
2. Use standard birth canal (lubricate).
3. Install uterine funnel with delivery cervix (lubricate).
4. Power on delivery fetus and lubricate.
5. Attach umbilical cord to delivery fetus.
6. Install delivery fetus.
Presentation: Breech
Loading Position: Right Sacrum Transverse.
7. Connect umbilical cord to placenta.
8. Insert intact placenta in placenta pouch. Attach pouch to pelvis.
9. Install delivery abdomen (connect speakers and palpable contraction system).
?
Cancel
Continue

The Mannequin Setup Screen - Vaginal Delivery Breech Right Sacrum Presentation

Mannequin Setup Screen for a Vaginal Delivery Vertex SCE

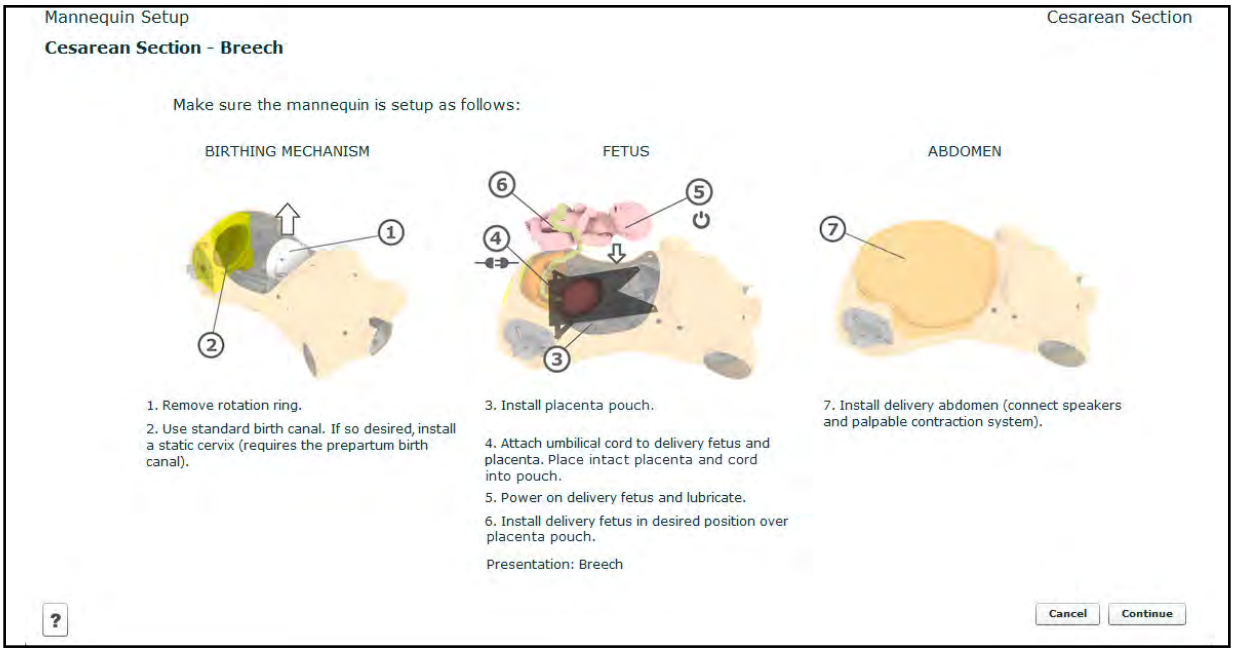
Once a vaginal delivery vertex SCE is selected, the mannequin must be manually configured prior to beginning the simulation. The configuration will correspond with the diagrams presented on the Mannequin Setup screen in the Müse software.


Mannequin Setup
Vaginal Delivery
Vaginal Delivery - Vertex
Make sure the mannequin is setup as follows:
BIRTHING MECHANISM
FETUS
ABDOMEN
1. Install rotation ring.
2. Use standard birth canal (lubricate).
3. Install uterine funnel with delivery cervix (lubricate).
4. Power on delivery fetus and lubricate.
5. Attach umbilical cord to delivery fetus.
6. Install delivery fetus.
Presentation: Vertex
Loading Position: Occiput posterior (face up).
7. Connect umbilical cord to placenta.
8. Insert intact placenta in placenta pouch. Attach pouch to pelvis.
9. Install delivery abdomen (connect speakers and palpable contraction system).
?
Cancel
Continue

The Mannequin Setup Screen - Vaginal Delivery Vertex Presentation

Mannequin Setup Screen for a Cesarean Breech SCE

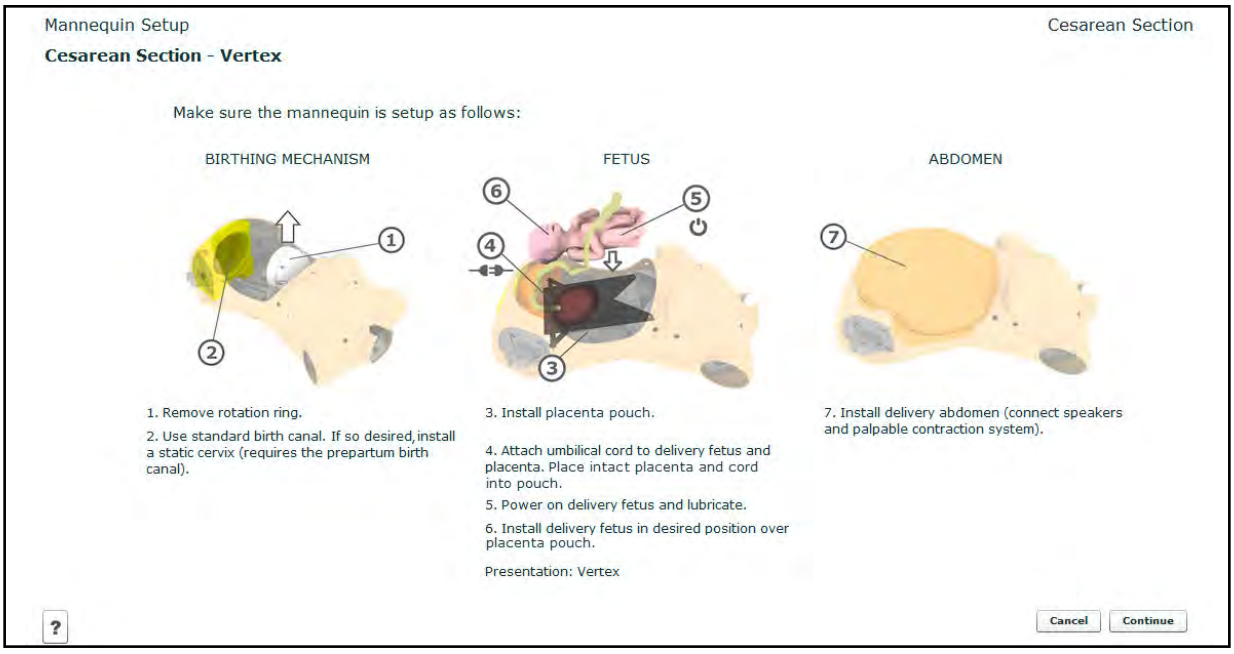
Once a Cesarean breech SCE is selected, the mannequin must be manually configured prior to beginning the simulation. The configuration will correspond with the diagrams presented on the Mannequin Setup screen in the Müse software.


Mannequin Setup
Cesarean Section
Cesarean Section - Breech
Make sure the mannequin is setup as follows:
BIRTHING MECHANISM
FETUS
ABDOMEN
1. Remove rotation ring.
2. Use standard birth canal. If so desired, install a static cervix (requires the prepartum birth canal).
3. Install placenta pouch.
4. Attach umbilical cord to delivery fetus and placenta. Place intact placenta and cord into pouch.
5. Power on delivery fetus and lubricate.
6. Install delivery fetus in desired position over placenta pouch.
Presentation: Breech
7. Install delivery abdomen (connect speakers and palpable contraction system).
?
Cancel
Continue

The Mannequin Setup Screen - Cesarean Breech Presentation

Mannequin Setup Screen for a Cesarean Vertex SCE

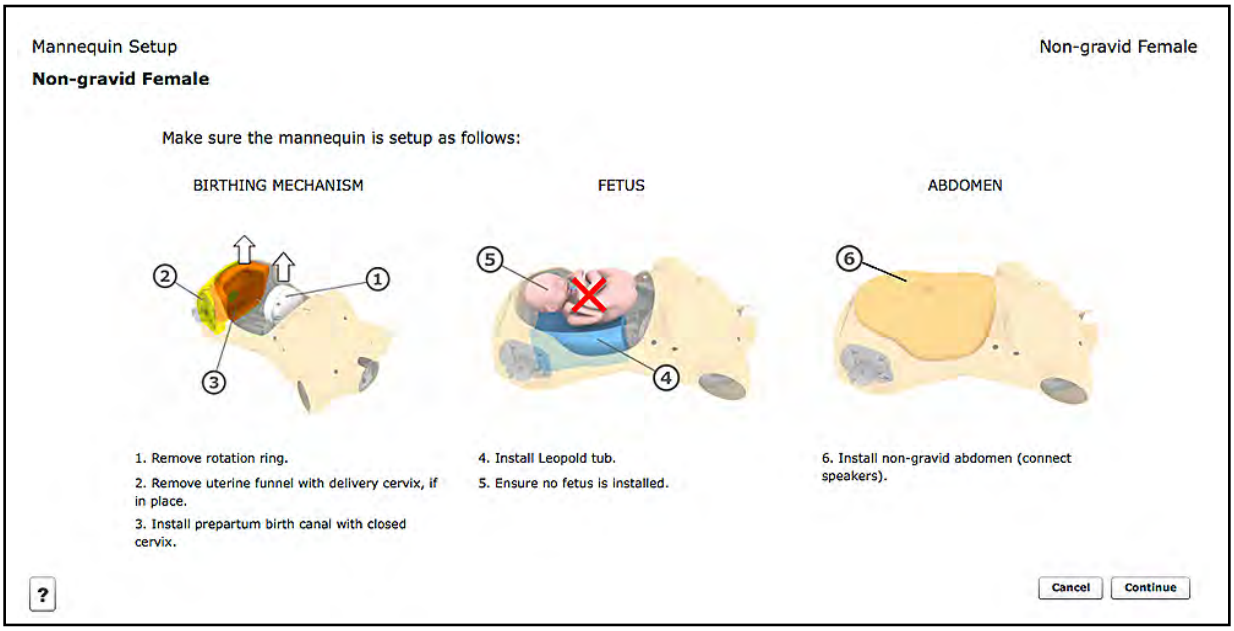
Once a Cesarean vertex SCE is selected, the mannequin must be manually configured prior to beginning the simulation. The configuration will correspond with the diagrams presented on the Mannequin Setup screen in the Müse software.


Mannequin Setup
Cesarean Section
Cesarean Section - Vertex
Make sure the mannequin is setup as follows:
BIRTHING MECHANISM
FETUS
ABDOMEN
1. Remove rotation ring.
2. Use standard birth canal. If so desired, install a static cervix (requires the prepartum birth canal).
3. Install placenta pouch.
4. Attach umbilical cord to delivery fetus and placenta. Place intact placenta and cord into pouch.
5. Power on delivery fetus and lubricate.
6. Install delivery fetus in desired position over placenta pouch.
Presentation: Vertex
7. Install delivery abdomen (connect speakers and palpable contraction system).
?
Cancel
Continue

The Mannequin Setup Screen - Cesarean Vertex Presentation

Mannequin Setup Screen for a Non-Gravid SCE

Once a Non-Gravid SCE is selected, the mannequin must be manually configured prior to beginning the simulation. The configuration will correspond with the diagrams presented on the Mannequin Setup screen in the Müse software.



The Mannequin Setup Screen - Non-Gravid

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